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FOURTH ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH,

OF THE

STATE OF KANSAS,

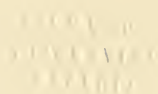
FROM

JANUARY 1, 1888, AND ENDING DECEMBER 31, 1888.

TOPEKA.

KANSAS PUBLISHING HOUSE: CLIFFORD C. BAKER, STATE PRINTER.

1889.



MEMBERS OF THE BOARD.

C. H. GUIBOR, M.D.....Beloit.....Term expires March 28, 1891.
D. SURBER, M.D.....Perry.....Term expires March 28, 1891.
J. W. JENNEY, M.D.....Salina.....Term expires March 28, 1891.
G. H. T. JOHNSON, M.D., PRESIDENT..Atchison....Term expires March 28, 1890.
D. C. JONES, M.D.....Topeka.....Term expires March 28, 1890.
J. MILTON WELCH, M.D.....Wichita.....Term expires March 28, 1890.
W. L. SCHENCK, M.D.....Osage City..Term expires March 28, 1889.
H. S. ROBERTS, M.D.....Manhattan..Term expires March 28, 1889.
J. F. LEWIS, M.D.....HowardTerm expires March 28, 1889.

SECRETARY, J. W. REDDEN, M.D., Topeka.

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COUNTY HEALTH OFFICERS.

The following is a list of the County Health Officers, and their post-office address, in the various counties in the State:

COUNTY.	TOWN.	HEALTH OFFICER.
Anderson.....	Garnett.....	D. C. Van Stavern, M. D.
Barber.....	Medicine Lodge.....	L. B. Gillette, M. D.
Barton.....	Great Bend.....	S. J. Shaw, M. D.
Bourbon.....	Fort Scott.....	R. Aikman, M. D.
Brown.....	Hiawatha.....	W. W. Nye, M. D.
Butler.....	Eldorado.....	J. A. McKenzie, M. D.
Chase.....	Cottonwood Falls.....	C. E. Hait, M. D.
Chautauqua.....	Sedan.....	Daniel L. Gray, M. D.
Cheyenne.....	Wano.....	E. L. Waterman, M. D.
Clark.....	Ashland.....	H. S. Parks, M. D.
Clay.....	Clay Center.....	S. E. Reynolds, M. D.
Cloud.....	Concordia.....	L. D. Hall, M. D.
Coffey.....	Burlington.....	Wm. Manson, M. D.
Comanche.....	Coldwater.....	John S. Holliday, M. D.
Cowley.....	Winfield.....	George Emerson, M. D.
Crawford.....	Girard.....	George W. Miller, M. D.
Davis.....	Junction City.....	P. Dougherty, M. D.
Decatur.....	Oberlin.....	A. W. Bariteau, M. D.
Douglas.....	Lawrence.....	N. Simmons, M. D.
Edwards.....	Kinsley.....	B. R. Mosher, M. D.
Elk.....	Grenola.....	R. C. Musgrave, M. D.
Ellis.....	Hays City.....	Hugo B. Kohl, M. D.
Ellsworth.....	Ellsworth.....	R. L. Doig, M. D.
Ford.....	Dodge City.....	T. L. McCarty, M. D.
Finney.....	Garden City.....	H. D. Niles, M. D.
Garfield.....	Ravanna.....	Henry C. Suess, M. D.
Graham.....	Millbrook.....	E. C. Loomis, M. D.
Greenwood.....	Eureka.....	F. W. Watson, M. D.
Hamilton.....	Syracuse.....	L. S. Downs, M. D.
Harper.....	Harper.....	W. G. Muir, M. D.
Harvey.....	Newton.....	Max Miller, M. D.
Haskell.....	Santa Fe.....	W. T. Mills, M. D.
Hodgeman.....	Jetmore.....	M. F. Rolens, M. D.
Jewell.....	Mankato.....	Walter Crew, M. D.
Johnson.....	Olathe.....	C. G. McKinley, M. D.
Kingman.....	Kingman.....	E. W. Hinton, M. D.
Labette.....	Oswego.....	E. E. Liggett, M. D.
Lane.....	Dighton.....	F. L. Rownd, M. D.
Lincoln.....	Lincoln.....	Henry M. Hall, M. D.
Linn.....	Mound City.....	Ira E. Coe, M. D.
Logan.....	Oakley.....	W. H. Keeney, M. D.
Lyon.....	Emporia.....	R. W. McCandless, M. D.
Marion.....	Peabody.....	C. A. Loose, M. D.
Marshall.....	Frankfort.....	W. H. Clutter, M. D.
McPherson.....	McPherson.....	W. A. Shelton, M. D.
Meade.....	Meade Center.....	C. W. Adams, M. D.
Miami.....	Fontana.....	George W. Robinson, M. D.
Mitchell.....	Beloit.....	C. H. Guibor, M. D.
Montgomery.....	Elk City.....	John F. Davis, M. D.
Morris.....	Council Grove.....	D. H. Painter, M. D.
Morton.....	Richfield.....	L. C. Bowers, M. D.

STATE BOARD OF HEALTH.

COUNTY HEALTH OFFICERS—CONCLUDED.

COUNTY.	TOWN.	HEALTH OFFICER.
Nemaha.....	Centralia.....	A. J. Best, M. D.
Ness.....	Ness City.....	J. W. Scott, M. D.
Norton.....	Norton.....	E. M. Turner, M. D.
Osage.....	Burlingame.....	James Haller, M. D.
Osborne.....	Osborne.....	B. F. Chilcott, M. D.
Ottawa.....	Minneapolis.....	James McHenry, M. D.
Pawnee.....	Larned.....	J. M. Cummins, M. D.
Phillips.....	Marvin.....	I. Miley, M. D.
Pottawatomie.....	Westmoreland.....	C. A. Skene, M. D.
Pratt.....	Pratt.....	J. M. Rogers, M. D.
Rawlins.....	Ludell.....	J. L. Constable, M. D.
Reno.....	Hutchinson.....	S. H. Sidlinger, M. D.
Rice.....	Lyons.....	N. F. Terry, M. D.
Rooks.....	Stockton.....	E. J. Donnell, M. D.
Rush.....	La Crosse.....	Wm. Goodwin, M. D.
Russell.....	Russell.....	J. W. Long, M. D.
Saline.....	Salina.....	J. W. Jenney, M. D.
Sedgwick.....	Wichita.....	E. B. Rentz, M. D.
Shawnee.....	Topeka.....	W. A. Williamson, M. D.
Sheridan.....	Kenneth.....	D. M. Freeman, M. D.
Sherman.....	Goodland.....	M. A. Rush, M. D.
Smith.....	Smith Center.....	O. P. Daly, M. D.
Stafford.....	St. John.....	C. M. Maxfield, M. D.
Sumner.....	Wellington.....	W. O. Barnett, M. D.
Thomas.....	Colby.....	V. C. Eddy, M. D.
Wabaunsee.....	Alma.....	E. W. Eldridge, M. D.
Wallace.....	Wallace.....	J. N. Page, M. D.
Washington.....	Washington.....	Chas. Williamson, M. D.
Wichita.....	Leoti.....	C. F. Cotteral, M. D.
Wilson.....	Fredonia.....	F. M. Wiley, M. D.
Woodson.....	Yates Center.....	E. K. Kellenberger, M. D.

REPORT OF THE BOARD.

PREFACE.

KANSAS STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, TOPEKA, KAS., Jan. 1, 1889.

To Hon. John A. Martin, Governor:

SIR—In conformity with the eleventh section of the act to create and establish a State and local boards of health in the State of Kansas, approved March 7th, 1885, I have the honor to submit to you the accompanying report for the year 1888.

Very respectfully,

J. W. REDDEN, M. D., *Secretary.*

THE Fourth Annual Report of the State Board of Health for the year 1888 is herewith presented.

The past year in our State has been one marked and memorable for its material wealth, extensive settlement, increase in population, and general prosperity. Every county in the State is now organized. The people in general labor for one common purpose: to build up the State, increase their own resources, and provide for the comfort, peace and prosperity of their own homes. But in adopting the measures to insure these desirable results, how little individual attention is paid to the essential requisites that will secure them; that is, the observance and enforcement of the plain and common-sense rules which will prevent disease and promote health. While the year has been noted for health, happiness, and comparative freedom from epidemics, yet where sickness and fatality have existed, they can be traced ordinarily to preventable causes.

No man is entitled to a home unless he can make that home happy and healthful. He has no right to be the means of bringing misery to others or to leave to posterity the legacy of ill-health or constitutional weakness. It

is the duty of all to be healthy, and so observe the laws of hygiene that they may contribute the full measure of their individual well-being to the public good. His indifference or neglect of health laws and the observance of the sanitation of his home is not only a crime against himself, but the infliction of a wrong on the public and a burden on posterity. In this country, with its plan of society and intercourse, no family is isolated. Whatever conditions may produce disease in one family are often responsible for sickness in others. Cases are recorded where disease has had its origin traced to very remote causes both as to time and place, and these causes have been found to be the result of neglect in the proper care of the home. The fact that such cases are not always found in the homes of the destitute and ignorant is evidence that in families of the well-to-do and cultured there is a want of the observance of the simplest sanitary precautions, which, we are constrained to believe, results more from neglect and indifference than from ignorance of the means to be employed.

There are at the present time eighty-three organized county health boards; active, zealous and progressive in educating the people in their respective counties in the principles of sanitary measures for the prevention of disease. Ten other counties have health organizations that accomplish more or less work in the same line of sanitary reform, while the remaining thirteen, mostly western and border counties, are interested, to some extent at least, in enforcing the plain and important rules which have for their object the prevention of disease and the preservation of health. What benefits have been accomplished during the year by the State and county health boards, cannot be fully estimated; but an examination of this annual report will convince any anxious inquirer that no financial estimate can be made of the number of epidemics that have been prevented, lives saved, sickness, suffering and distress driven from the quiet homes and cheerful firesides.

The reports of the State Board of Health have grown so much in favor with the people that the demand for the last, or Third Annual Report, cannot be supplied, notwithstanding the fact that by authority of the statutes twenty-five hundred copies were printed and distributed; yet the supply is exhausted, and the demand is frequently made for copies from other States and countries, by professional, scientific and sanitary investigators. The reports constitute a text-book of sanitary knowledge, which should be in the hands of every householder, for the elements of sanitary principles are contained therein, as well as the inducements to apply them for the well-being

of the community. No one can peruse such a mass of information without finding something which particularly concerns his own interests or pursuits.

During the past five years, under the teachings of boards of health, great improvements have taken place in the sanitary condition of the people; they have become more cleanly and regular in their habits; houses are better constructed; premises are less filthy and pestilential; fresh and pure air is believed to be conducive to health; better system of draining is adopted; nuisances abated and removed; better ventilation of public and private buildings, with an abundance of fresh air and sunlight.

Florence Nightingale forcibly writes: "A dark house is almost always unhealthy—always an ill-aired house. Want of light stops growth, and promotes scrofula, rickets, consumption, etc., especially among children. People lose their health in a dark house, and if they get ill they cannot get well again in it."

During the year the State Board has prepared, printed and distributed, through the county health boards and county clerks, in the various counties in the State, five thousand pamphlets on Small-Pox, Scarlet Fever, Diphtheria, and Typhoid Fever; their Prevention and Restriction. These pamphlets, through the kindness and public spirit of the editors, have been published in full in the majority of the counties in the State, and through these channels have reached the homes of tens of thousands of the people, and have thus proved valuable and important factors in educating the masses in the simplest and most effectual methods of preventing these prevalent and fatal, but preventive, diseases.

In reference to scarlet fever, we will here quote with emphasis the well-established opinion of a distinguished sanitarian. Dr. Budd, of Bristol, England, who died a few years ago, after a large and extended experience as a physician and hygienist was able to say that "for a period of nearly twenty years, during which I have been employed in a very wide field, I have never known scarlet fever to spread in a single instance beyond the sick-room, and in a very few instances within it." The rules which he laid down to accomplish so favorable a result with a disease so infectious were few and simple, but imperative. They were essentially the same as those which are now generally employed by local authorities in all parts of the world, and by means of which they meet with an amount of success commensurate with the wisdom of the laws, the efficiency of the local officers, and the intelligent coöperation of the people at large. What is said of scarlet fever is equally true of diphtheria, typhoid fever, and measles;

As sanitarians and educators we should lay more stress and emphasis upon the importance and value of preventive medicine. For he who prevents a disease is surely a greater benefactor and humanitarian than he who controls and suppresses a disease or epidemic after it has once gained a foothold, and made its impress upon a family or community.

While much has been done in this line of sanitation, still much grander results could have been secured had the State Board been supplied with ample funds and clothed with authority to enforce its rules and regulations for the prevention and suppression of contagious and pestilential diseases; for the imperative necessity for the possession of mandatory, or at least greater power than the State Board of Health now possesses, has been forcibly illustrated in the epidemic of small-pox at Wichita, and the inefficient management of the same by the city authorities there.

At the first outbreak of the disease there, the Executive Committee of the State Board of Health sent a dispatch to Wichita offering to come there and assist them, and advise what was best to be done to stamp out in its incipency this threatened epidemic, and requesting an early response to our telegram. In about ten days afterward the Secretary of the Board received a letter assuring him that Wichita was able to take care of her own small-pox cases without any outside help. The officers of the State Board of Health then advised, as the surest and cheapest means of stopping the spread of this disease, that the infected and exposed persons be isolated and quarantined, and the few houses and contents where it had then made its appearance be burned, that the germs of the disease might thus be certainly destroyed. Had the Board been backed by ample power to rigidly enforce its advice, there would doubtless have been less than a dozen cases of small-pox at Wichita instead of fifty-eight cases and nine deaths, with outbreaks of this disease in several counties in the State, with Wichita as the center and distributing point of the infection. Advisory power such as the State Board of Health now possesses may be amply sufficient for the purpose of educating the people in sanitary matters, but it does not give the Board power enough to successfully combat and wipe out epidemics of small-pox and other contagious diseases.

The reports of the county health officers show that during the year small-pox and varioloid prevailed in fifteen counties, and that the origin of this disease in nine of these counties was traced directly or indirectly to Wichita. Wichita had by far the largest per cent. of mortality, being one in every six and one-half persons, while McPherson follows next in the list, having

eight deaths out of sixty cases, while in the remaining thirteen counties there were only four deaths out of one hundred and twelve cases. At McPherson the physicians and prominent citizens were loathe to believe that they had small-pox in their city, and were altogether too dilatory in enforcing rigid and thorough isolation, quarantine, vaccination, and disinfection; while in Reno, Leavenworth, Sumner, Harvey, Saline, Lyon, Kingman, Pratt, Rice, Shawnee, Pawnee, Clay and Wabaunsee counties they promptly enforced the well-established and important rules prescribed by the State Board of Health, with most gratifying results.

We desire to call the attention of all health officers to the admirable, full, and very interesting special reports on Small-Pox in Leavenworth, by Dr. Bidwell, on pages 62-65; in Wichita, by Dr. Welch, on pages 129-132. Of the fifty cases in Leavenworth there were thirty-three colored, and yet only one death occurred out of the fifty cases, that being a colored woman who was sick with pneumonia when she was taken down with the small-pox. This remarkable result was due mainly to the efficient measures adopted and rigid quarantine and precautionary rules enforced by the health authorities.

We hope the time is not far distant when the people in general will be educated to see the necessity of exercising the same vigilance and using all possible safeguards in preventing all other contagious and pestilential diseases, as they do now in the cases of small-pox, cholera, and yellow fever. An experienced and practical sanitary writer says: "A mistaken idea prevails that an epidemic must prevail before there is need for any sanitary precautions, when the truth is, such epidemics are always evidence that these precautions have been fatally neglected. Moreover, the greatest mortality does not result from epidemics, but from deaths constantly occurring in the course of such diseases as are admitted to be wholly preventable, and result most frequently from the unsanitary conditions of neglected homes, and, in the absence of inspection and preventive means, extend throughout communities. Such diseases as diphtheria, scarlet fever, typhoid, and others of this class, are constantly carrying off their victims, and in the aggregate far surpass the deaths in epidemics. These diseases, if they do not result directly from ill-kept homes, find a lodgment there, and their virulence and extent are increased by their unsanitary condition. To such a degree has sanitary knowledge been disseminated, and the facilities for gaining such knowledge are so ample, that it is not a Utopian dream to suppose every individual a sanitarian and every home a sanitarium."

.

The last Legislature occupied much time in discussing "our meat supply." While we recognize the importance of this subject and necessity for inspection in this department, yet we would emphasize the greater importance and paramount necessity of guarding and protecting the masses of the people from *adulterated and unwholesome food and milk adulterations*. Most European governments have adopted stringent measures to stop the sale of adulterated articles of food. In Great Britain eighty public analysts have been appointed under act of Parliament. They analyze annually from 15,000 to 20,000 samples, and detect and expose from 3,000 to 4,000 adulterations every year. The German Government had, in 1880, nearly 300,000 samples analyzed, and obtained upwards of 3,000 convictions in the courts. In New York \$10,000 was appropriated for investigating the adulterations in food, and in 1883, \$30,000 was voted by the Legislature for the same purpose. In New Jersey \$6,000 is given for a like purpose, and in Massachusetts the State Board of Health has an annual appropriation of about \$18,000 for the inspection of food, drugs, and other matters incident thereto, including the analysis of articles of food. In Canada, when the work of inspection was begun, more than fifty per cent. of the articles examined was found to be adulterated; but in a few years this percentage has been reduced one-half.

It has been estimated that in States having no inspection laws, the staple articles of food suffer adulteration to the extent of from 45 to 66 per cent., and in no one article of food is this adulteration greater than in that of milk. In Chicago it has been shown that not more than 10 per cent. of the milk sold is wholesome and unadulterated. It was estimated in New York City, a few years ago, that the sale of water for milk (and what kind of water nobody could know) amounted in that city to about four millions of dollars per annum; and it was estimated by a Boston Sanitary Commission that that city was paying about \$500,000 per annum for water mixed with milk. In Baltimore it is estimated that the quantity of milk used daily is 100,000 quarts, for which about \$7,000 is paid, and of this milk probably one-fourth part is water, so that they are paying for water in milk over \$1,500 a day, or more than \$500,000 annually. Professor Babcock, who was the official analyst of Boston a few years ago, obtained samples of milk from some of the most respectable milkmen and grocers in the city, which were all sold as pure milk, and at the highest prices; and his examination of these samples goes to confirm the fact, which some milkmen themselves do not hesitate to admit, *that in conducting the milk trade of our large cities, adulteration is*

the rule. Nor is the evil unmixed. Much of the water of adulteration is derived from country wells and springs, added by persons in agricultural districts where typhoid fever may be rife. Recent investigations, conducted in the most thorough and searching manner by experts, have established the fact that epidemics of typhoid fever, and of other infectious diseases, such as scarlet fever, may be produced by infected milk; and this being the case, we cannot but view with distrust and alarm this importation of country well-water, mingled with the milk we drink.

Much progress has been made in special sanitary work by the State Board, in personal and careful inspection of all the State charitable institutions, with such recommendations and suggestions to the trustees of said institutions as the Board were satisfied would materially improve their sanitary surroundings, and add to the comfort and health of the inmates.

Impure water is the fruitful source and cause of many preventable and fatal diseases. This fact is becoming more generally recognized, and as a consequence, more attention is paid and care given to the selection of pure water supplies. It is important, therefore, that we should know what the standard of a pure water supply is, and not be content until we have secured it. For sad experience has shown us that deviations from certain standards are hazardous, because in certain states of weather or other surroundings, or in certain ages or constitution, there may be and are serious results. Sometimes these are of a general character, as where some slight disturbance of the digestive act takes place, and there is slight fever or diarrhea, or other functional disturbance. In other cases there is some specific disease, as typhoid fever, or epidemic dysentery. We have extended our research and investigation in this important direction, so far as time and the limited means at the disposal of the Board would warrant, and with beneficial results.

The registration of physicians and midwives in the State, although not complete, has been made as near so as possible under our law. The report shows that up to the present time there have been registered 2,727.

The collection and tabulation of vital statistics is a slow and tedious process, but under the limited authority and power of the law we have made regular and steady progress, and we hope the people will be educated to see the necessity and benefits resulting from the accurate and reliable collection of vital statistics. An examination of the reports of births, deaths and marriages will show that the birth returns of 1888 were 12 per cent. more

than those of 1886; the death returns 103 per cent. more, and the marriages were 70 per cent. more; which is an advance in the right direction.

Inter-state notification of diseases especially dangerous to public health is an important move in sanitary reform, and a similar course between counties, through the State Board, will accomplish untold benefits.

We would direct attention to the tabulated statements of deaths from ten of the most dangerous diseases to public health, as reported by the various County Health Officers.

The papers published under "Miscellaneous Health Topics" are interesting and instructive.

The addresses and papers presented at the Third Annual State Sanitary Convention are able, instructive and valuable contributions to sanitary science; are carefully prepared by the leading sanitarians and educators of the State, and will exert a controlling and moulding influence upon all who will give them careful thought and investigation.

The work of the Board grows in importance and scope; while it requires time and labor to educate the people in the plain, every-day lessons of sanitary reform, yet they manifest a willingness to aid and enforce all rules and regulations, that is both encouraging and commendable.

In conclusion, we would emphasize the following beautiful truth, so aptly expressed by Beaconsfield:

"The health of the people is really the foundation upon which all their happiness and all their power as a State depend. The health of the people is, in my opinion, therefore, the first duty of the statesman; and I am confident that there is no object of higher importance to engage the interests of society."

Very respectfully,

G. H. T. JOHNSON, M. D., *President.*

J. W. REDDEN, M. D., *Secretary.*

D. C. JONES, M. D.

J. MILTON WELCH, M. D.

H. S. ROBERTS, M. D.

J. F. LEWIS, M. D.

C. H. GUIBOR, M. D.

W. L. SCHENCK, M. D.

D. SURBER, M. D.

J. W. JENNEY, M. D.

PART II.

SECRETARY'S REPORT.

I HAVE the honor as well as the pleasure of presenting the following as the Fourth Annual Report of the State Board of Health. In its arrangement and composition, a similar plan has been adopted as in the preceding reports, presenting only those subjects which are of more permanent value and interest, and omitting the minor details of work and of correspondence, which are of only passing interest.

The membership remains the same as when the last report was made. At the annual meeting held in June, Dr. G. H. T. Johnson was reelected President, having been elected to that position annually since the organization of the Board, April 5th, 1885. Drs. C. H. Guibor, D. Surber and J. W. Jenney, whose term of membership expired March 28th, 1888, were reappointed by the Governor to fill the vacancies thus occasioned.

The names and addresses of the members of the Board, with the dates at which their terms of office expire, are as follows:

C. H. Guibor, M. D.....	Beloit.....	Term expires March 28, 1888.
D. Surber, M. D.....	Perry.....	Term expires March 28, 1888.
J. W. Jenney, M. D.....	Salina.....	Term expires March 28, 1888.
H. S. Roberts, M. D....	Manhattan.....	Term expires March 28, 1889.
J. F. Lewis, M. D.....	Howard.....	Term expires March 28, 1889.
W. L. Schenck, M. D.....	Osage City.....	Term expires March 28, 1889.
G. H. T. Johnson, M. D., President..	Atchison.....	Term expires March 28, 1890.
D. C. Jones, M. D.....	Topeka.....	Term expires March 28, 1890.
J. Milton Welch, M. D.,.....	Wichita.....	Term expires March 28, 1890.
J. W. Redden, M. D.....	Topeka.....	Secretary.

The President appointed the following standing committees for the year:

STANDING COMMITTEES.

Legislation, Revision of Rules and Regulations, and Library—H. S. Roberts, M. D.

Hygiene of Occupations, and Railway Sanitation—W. L. Schenck, M. D.

Epidemic and Endemic Diseases, and Quarantine—C. H. Guibor, M. D.

Topography, Meteorology, and Hygiene of Public Institutions—D. C. Jones, M. D.

Water Sources, Sewerage, Drainage, and Disposal of Substances Injurious to Health—J. Milton Welch, M. D.

Especial Sources of Danger to Life and Health—J. F. Lewis, M. D.

Adulteration of Food, Drinks and Drugs—D. Surber, M. D.

Heating, Ventilation, Lighting and Hygiene of Schools—J. W. Jenney, M. D.

Vital Statistics, Registration, Meteorological Service, and Nomenclature—J. W. Redden, M. D.

Finance—C. H. Guibor, M. D., D. C. Jones, M. D., and D. Surber, M. D.

Executive—G. H. T. Johnson, M. D., D. C. Jones, M. D., and D. Surber, M. D.

ABSTRACTS AND BRIEF ACCOUNTS

OF THE PROCEEDINGS AT MEETINGS OF THE STATE BOARD OF HEALTH DURING THE
YEAR ENDING DECEMBER 31, 1888.

FIRST QUARTERLY MEETING.

TOPEKA, KAS., March 8, 1888.

The regular quarterly session of the Kansas State Board of Health was held at the office of the Secretary, in the city of Topeka, on Thursday, March 8, 1888.

Present: Drs. Johnson, Jones, Guibor, Lewis, Schenck, Welch, and Jenney. Drs. Roberts and Surber sent letters, stating that it was impossible for them to be present during this session.

The Board was called to order at 4 P. M.; the President, Dr. Johnson, in the chair. A quorum being present, the Board proceeded to business.

On motion, the reading of the minutes of the last session was dispensed with.

The Secretary presented his regular quarterly report reviewing the sanitary work accomplished by the State and Local Health Boards since the last quarterly session, giving a brief statement of the contents of the Third Annual Report, now in the hands of the State Printer, and soon to be issued. The report also gave a full synopsis of all the information received in relation to the small-pox that is now prevailing in fourteen different States, as well as the history, management, and result of the small-pox as it has prevailed in several of the central and southern counties in this State since December 1st, and reported to this office by the local and municipal health boards and other sanitarians.

On motion, said report was approved, and ordered engrossed for publication.

On motion, the Secretary was requested to correspond with those health officers where small-pox had prevailed and was at first pronounced chicken-pox, and request them to send special reports to this office, giving the ages of said persons; whether or not they were vaccinated, and if so, the time when vaccinated; whether successful or not, and the results of all such cases.

On motion of Dr. Schenck, the Secretary was instructed to issue a circular letter and send to every county health officer in the State, and furnish him with a sufficient number to supply every physician and midwife in his county, referring them to the section of the law requiring all physicians and midwives to return births and deaths to them, and requesting said health

officers to report the names of all physicians and midwives who failed to make reports to him as required by said law, and request the county attorney to enforce the penalty as therein provided.

Dr. Welch presented a full and interesting report of the origin, history, progress and management of the small-pox, as prevailing in Wichita, up to the date of this meeting.

On motion, said report was approved, ordered engrossed for publication, and will be found on subsequent pages.

On motion, the President was requested to appoint three delegates from the State Board of Health to attend the sessions of the National Conference of State Boards of Health, to be held in Cincinnati, Ohio, commencing May 4th. The President appointed Drs. Welch, Guibor and Schenck as said delegates.

The following bills were referred to the Auditing Committee:

Expenses for the use of the office of the Secretary for the present quarter:

Telegrams.....	\$1 95
Gas.....	3 60
Express charges.....	10 45
Coal shovels and dusters.....	2 85
Postage stamps.....	45 00
100 pamphlets of Proceedings of National Conference of State Boards of Health.....	3 50
Janitor for twelve months.....	60 00
J. A. McLaughlin for three months' rent of office rooms.....	60 00

To Reid Alexander, M. D., for chemical analyses and microscopical examinations of two samples of water from Blind Asylum, by order of Executive Committee.....	20 00
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Expenses of members attending sessions of the Board:

Dr. Johnson.....	7 68
Dr. Schenck.....	3 00
Dr. Welch.....	15 75
Dr. Jenney.....	10 85
Dr. Lewis.....	14 20
Dr. Guibor.....	14 60
Dr. Johnson, for special sanitary services at Reform School.....	10 00
Dr. Jones, for special sanitary services at Reform School.....	10 00
Dr. Surber, for special sanitary services at the Reform School, and traveling expenses.....	11 50
Dr. Welch, for sanitary services pertaining to small-pox at Wichita, (by order of the Board,).....	50 00
Dr. Jenney, (by order of the Board,) for sanitary services pertaining to small-pox at McPherson.....	50 00

On motion, the Board took a recess until 8 P. M.

At 8 P. M. the Board reconvened. The same members were present as during the afternoon session.

Dr. Alexander reported that he had expended the \$16.15, the amount

left in his hands by order of the State Board of Health, for constructing stands and shelving for chemical apparatus and appliances.

On motion, said report was received and approved.

The Auditing Committee made a favorable report on all bills submitted to them.

On motion, said report was approved, and the bills ordered paid.

The Secretary then presented a special report for a pamphlet, to be issued by the State Board, on "Small-Pox: Its Prevention and Restriction."

On motion, said report was approved, and the Secretary instructed to have printed, in pamphlet form, 5,000 copies or more of the same, to be distributed, through the county health officers and county clerks, to all persons in the State who might wish them or need them. Said pamphlets to be accompanied by a circular letter to the county health officers, urging upon them the importance of having said pamphlets published in all the county papers, for distribution for the benefit of the people. Said circular will be found on subsequent pages.

The standing committees on Legislation and on Rules and Regulations reported progress, and were granted until the June meeting to present a full report.

On motion, the Board adjourned to meet in annual session on the second Thursday in June (14th).

J. W. REDDEN, *Secretary*.

SECOND QUARTERLY (FOURTH ANNUAL) MEETING.

TOPEKA, KAS., June 14, 1888.

The State Board of Health convened in regular annual (fourth) session at the office of the Secretary, at 4 P. M. Present: Drs. Roberts, Jones, Welch, Guibor, and Schenck.

As the President was absent, on motion, Dr. Schenck was elected President *pro tem*.

Communications were read by the Secretary from Drs. Johnson, Surber, Lewis, and Jenney, giving satisfactory reasons for their inability to be present at this meeting of the Board.

The minutes of the last quarterly session were read and approved.

The Secretary then read his quarterly report (fourth annual).

On motion, said report was received, approved, and ordered engrossed for publication. Said report will be found printed on subsequent pages.

The following bills were read, and referred to the auditing committee:

Bill of the chemist and microscopist for chemical analyses and microscopical examinations of three samples of water sent by county health officers,	
at \$15.....	\$45 00
State Printer, for printing in pamphlet form 1,000 copies of Dr. Schenck's paper on "Preventive and State Medicine".....	10 00
Postage stamps for present quarter.....	75 00

Wells, Fargo & Co., express charges for present quarter.....	\$58 90
Pacific Express Co., express charges for present quarter.....	29 35
To clerical labor in the office of the Secretary, preparing manuscript for reports, records, etc., for the fiscal year of 1887 and 1888.....	131 50
Expenses of Secretary to Atchison, for official conference about small-pox..	8 50
Electrotype plate of Secretary's signature, for circular letters and postals..	2 25
For type-writing of manuscript for State Board of Health.....	2 00
Office rent for present quarter.....	60 00
Expenses of Dr. Schenck as a delegate to the National Conference of State Boards of Health.....	65 00
Expenses of Dr. Welch as a delegate to the National Conference of State Boards of Health.....	78 90
Expenses of members attending this session of the State Board of Health, as follows:	
Dr. Guibor.....	14 60
Dr. Roberts.....	9 60
Dr. Welch.....	14 04
Dr. Schenck.....	5 00

On motion, the Board took a recess until 8 P. M.

The Board reconvened at 8 P. M. Same members present as during the afternoon session.

The Auditing Committee reported favorably upon all bills referred to them at the afternoon session.

On motion, said report was received, approved, and the bills ordered paid.

The following communication of Irving A. Watson, M. D., Secretary of the New Hampshire State Board of Health, was presented to the Board:

STATE BOARD OF HEALTH, {
SECRETARY'S OFFICE, CONCORD, N. H. }

DEAR SIR: The bill referred to in the inclosed resolutions was formulated by a committee of the American Public Health Association. I hope you will officially call the attention of your representatives in Congress to the bill, and ask them to support it.

Very respectfully,

IRVING A. WATSON, *Secretary*.

P. S.—I wish you would write especially to Representative Anderson, of your State, who is a member of the Committee on Commerce. Show him that the sanitarians of the country are desirous of a public health service that can be relied upon. If you desire to know something of the experience of this Board with the U. S. Marine Hospital service, see our Annual Report for 1886 (vol. 5), p. 97, and following.

Very truly,

IRVING A. WATSON.

CONCORD, N. H., April 3, 1888.

DEAR SIR: At the second quarterly meeting of the State Board of Health, holden at the Secretary's office at the State House to day, the following preamble and resolutions were adopted:

This country to-day does not possess a national health department, organically created, sufficiently equipped or so administered as to meet the approbation or confidence of State or municipal health authorities. The National Board of Health exists only in name, and is a useless organization, held together because the creating act has never been repealed—without funds, and inoperative.

The U. S. Marine Hospital service, a bureau of the Treasury Department created for a specific work, has undertaken to perform the functions of a national health department, but has signally failed to

administer the duties of such a department in a manner satisfactory to the sanitarians, State and local health authorities of the United States. The State Board of Health of New Hampshire possesses documentary evidence showing the inefficient work of the U. S. Marine Hospital service as a national health authority, and the health departments of other States and of the Province of Ontario possess similar knowledge of its sanitary incapacity.

These facts being generally known by the sanitary authorities of various States, there is a general demand for legislation that will prepare the country to resist more effectually the invasion of preventable diseases, as well as to stamp them out more promptly whenever and wherever they may appear.

We believe it is time that the health of the citizens of this country receive at least as much consideration as is accorded the cattle and swine of the nation: therefore, be it

Resolved, That the State Board of Health of New Hampshire respectfully ask our Senators and Representatives in Congress to use their influence and votes to establish a bureau of public health, with ample authority and funds to administer such a department properly.

Resolved, That we indorse the provisions of H. R. bill No. 1526, Fiftieth Congress, first session, entitled "A bill to prevent the introduction of contagious and infectious diseases into the United States, and to establish a Bureau of Health."

Resolved, That the Secretary of the State Board of Health be requested to transmit a copy of this preamble and resolutions to each member of Congress from this State.

On motion, said communication was received and ordered engrossed, and a copy of the same was referred to Dr. Roberts, with the request that he have a conference with Representative Anderson upon the subject, and report the result of said conference to the State Board of Health at its next regular session.

The following communication from the Kansas Pharmaceutical Association was read:

LEAVENWORTH, KANSAS, June 6, 1888.

Dr. J. W. Redden, Topeka, Kansas: I learn from Dr. Lane that you are the proper person to confer with in regard to matters coming before the State Board of Public Health. The Kansas Pharmaceutical Association appointed a committee to confer with the State medical associations and the State Board of Public Health to devise some means to regulate the sale of proprietary and secret medicines. It is intended to pass laws prohibiting dangerous, injurious and worthless preparations from being sold in the State. There is considerable feeling on part of druggists and the public in other States, and whenever it will suit your convenience I would like to call our committee, and meet with you to arrange some plan that such legislation as may be thought best can be brought up next winter. Yours, R. J. BROWN.

On motion, said communication was received, and referred to the Secretary, who was requested to notify said committee to meet with the State Board of Health, at its next regular meeting, for conference upon the subject-matter contained therein.

A paper upon the subject, "Thou Shalt not Kill," by Mrs. J. M. Patten, of Beloit, was read by the Secretary.

On motion, said paper was received, approved, and ordered engrossed for publication. Said paper will be found printed subsequently.

Dr. Schenck then read a paper on "Vital Statistics." Said paper was received, and ordered engrossed, and will be found printed on subsequent pages.

Dr. Roberts offered the following resolution:

Resolved, That the Secretary of the State Board of Health, as its executive officer, is hereby directed to notify local boards of health to inform resident physicians that on and after August 1st, 1888, any violation of section 9, of "An act creating State

and local boards of health," will be prosecuted. And he is hereby directed to prosecute any such violation, and is authorized to employ when necessary an attorney to assist the county attorney to prosecute such violations.

On motion, said resolution was adopted, and the Secretary was instructed to issue a circular letter to notify all practicing physicians and midwives, through the county health officers and the press, that on and after August 1st said law must be rigidly enforced, even if prosecutions are necessary.

Dr. Welch offered the following resolution:

Resolved, That in counties where no health officer has been appointed, or where the county commissioners refuse or neglect to appoint a county health officer, physicians of said county or counties be required to report the vital statistics required by law directly to the Secretary of the State Board of Health.

On motion, said resolution was adopted, and the Secretary instructed to issue a circular letter covering said resolution, and through the county clerks and the press in said counties to reach and notify the practicing physicians and midwives in said counties that they are expected promptly to comply with the requirements of said resolution.

Drs. Welch and Schenck then presented their reports as delegates from the Kansas State Board of Health to the National Conference of State Boards of Health, held at Cincinnati, Ohio, in May, giving brief synopses of the proceedings of said Conference.

On motion, said reports were approved and ordered engrossed, and will be found printed subsequently.

The Secretary then presented pamphlets on "Scarlet Fever, Diphtheria, and Typhoid Fever: their Prevention and Restriction," prepared by him, and approved by the Executive Committee.

On motion, said pamphlets were received and approved, and as many copies of said pamphlets ordered printed, for distribution, as in the judgment of the Secretary was deemed necessary—not less than five thousand of each.

A communication was received from the President, Dr. Johnson, in reference to a very recent outbreak of diphtheria in a certain locality in the city of Atchison, originating from the use of impure milk, and suggesting the propriety of some member of the State Board of Health visiting Atchison for the purpose of a conference relative to said outbreak.

On motion, the Secretary was instructed to write Dr. Johnson, and offer any needed assistance by any member of the Board, and their willingness to visit Atchison for conference with him at any time that he may desire.

Under the order of election of officers, Dr. Roberts then nominated Dr. Johnson as President of the Board for the ensuing year. Dr. Welch seconded the nomination.

As Dr. Johnson was the only one nominated, on motion of Dr. Welch the Secretary was instructed to cast the ballot of the members of the Board. Accordingly, the Secretary cast the vote for all the members of the Board

present, for Dr. Johnson as President. The President *pro tem.* then declared Dr. Johnson elected President of the Board for the ensuing year.

On motion, the Board then adjourned, to meet on the second Thursday in September (13th), at 4 P. M.

J. W. REDDEN, M.D., *Secretary.*

THIRD QUARTERLY MEETING.

TOPEKA, KAS., September 12, 1888.

The State Board of Health met in regular quarterly session at the office of the Secretary, in Topeka, on Wednesday September 12, at 4 P. M.

The following members were present: Drs. Johnson, Roberts, Welch, Jones, Guibor, Schenck, and Jenney. Letters were read from the other members of the Board, giving satisfactory reasons for their absence.

The minutes of the last session (fourth annual meeting) were read, approved, and ordered enrolled for publication.

The Secretary then presented his quarterly report. On motion, said report was received, approved, and ordered printed in the proceedings of the Board. It will be found on subsequent pages.

The following bills were read, and referred to the Finance Committee:

Expenses for the use of the office of Secretary for the past quarter:

Postage stamps and postage.....	\$75 00
Express charges paid Wells, Fargo & Co.....	9 30
Express charges paid Pacific Express Co.....	1 30
Cash paid for cartage.....	75
Cash paid for twenty copies <i>Topeka Daily Capital</i>	1 00

Dr. Reid Alexander, for making chemical analyses and microscopical examinations of two samples of water—one sent by the County Health Officer of Cowley county, the other by the County Health Officer of Pawnee county..... 30 00

J. A. McLaughlin, for three months' office rent for July, August, and Sept.. 60 00

Expenses of Drs. Roberts, Welch, Schenck, Jones, and Jenney, for visits and sanitary service at State Reform School, Topeka..... 50 00

Expenses of members attending the sessions of the Board—

Dr. Johnson.....	5 27
Dr. Schenck.....	7 00
Dr. Roberts....	8 60
Dr. Welch.....	18 74
Dr. Jenney.....	21 00
Dr. Guibor.....	14 60

On motion, the following were appointed as delegates to attend the sixteenth annual meeting of the American Public Health Association, to be held at Milwaukee, Wisconsin, in November: Drs. Jones, Welch, Redden, and Schenck; and the President was authorized to appoint any other member as delegate in case any of the above members were unable to attend said Association.

The Board then took a recess until 7:30 P. M.

The Board reconvened at 7:30 p. m. Same members present as were in attendance at the afternoon session.

The Finance Committee made a favorable report on all bills referred to them at the afternoon session.

On motion, said report was approved.

The following preamble and resolution was read and adopted:

Whereas, Information has come to the State Board of Health that a severe epidemic of a low type of fever is now prevailing among the inmates of the State Reform School at Topeka; and *whereas*, similar epidemics have prevailed before at this institution: therefore, be it

Resolved, That the State Board of Health appoint a committee, in connection with the attending physician and Superintendent of the Reform School, to visit said institution and make a thorough investigation, with a view of ascertaining the cause of said epidemic, and recommend such measures to the Trustees of the State Charitable Institutions as will remove the cause, and prevent if possible any further recurrence of it; and report their action and recommendations to the State Board of Health at its present session.

In compliance with said resolution the President appointed the following special committee to visit the Reform School, and in connection with the Superintendent and attending physician make a thorough investigation, and report the result to this session of the State Board of Health: Drs. Roberts, Welch, Schenck, Jones and Jenney.

On motion, the Executive Committee and the Secretary were appointed a special committee to represent the State Board of Health, who, in connection with a local committee of the prominent citizens of Emporia, shall make all necessary preparations and arrangements for the Third Annual State Sanitary Convention, to be held at Emporia Wednesday and Thursday, December 5th and 6th.

The Board then adjourned until Thursday, September 13, at 2 p. m.

THURSDAY, September 13—2 p. m.

The Board met pursuant to adjournment. Present: Drs. Roberts, Welch, Schenck, Jones, and Jenney. As the President was called home, Dr. Welch was, on motion, elected President *pro tem*.

Dr. Schenck, as chairman of the special committee appointed to visit and examine the Reform School, read a report. (Said report will be found on subsequent pages.) On motion, the report was adopted.

On motion, the Board adjourned to meet at Emporia on Wednesday, December 5th, at 4 p. m.

J. W. REDDEN, M. D., *Secretary*.

FOURTH QUARTERLY MEETING.

EMPORIA, KAS., December 6, 1888.

The State Board of Health convened in regular quarterly session, at 4 o'clock p. m., in the parlors of the Fifth Avenue Hotel, Emporia, Kansas; Dr. Johnson, President, in the chair.

Present: Drs. Jones, Johnson, Welch, Surber, and Schenck. Drs. Roberts, Lewis, Guibor and Jenney sent letters expressing regrets that they could not be present, and giving satisfactory reasons for their detention.

The minutes of the last quarterly session were read and approved.

The Secretary then presented his quarterly report, giving a brief synopsis of the work of the State and county health boards during the present year, the encouragement for future labor, and the future prospects.

On motion, the report was received, approved, and ordered engrossed for publication in the Fourth Annual Report, and will be found published in same.

The Executive Committee had no special report to present.

The delegate, Dr. Jones, from the State Board of Health to the American Public Health Association, held in Milwaukee, Wisconsin, November 20th to 23d, presented his report, which was approved, and ordered engrossed for publication in the Fourth Annual Report, and will be found on subsequent pages.

The following bills were referred to the Auditing Committee:

Postage account, the present quarter, for supplies and pamphlets sent out by the State Board of Health.....	\$75 00
Wells, Fargo & Co., express charges for supplies, the present quarter.....	5 15
Pacific Express Co., express charges for supplies, the present quarter.....	80
Gas company, for gas for office.....	1 80
Expenses of Dr. Jones, as delegate to the American Public Health Association.....	70 00
A. M. Smith, for clerical labor in the office of the Secretary.....	88 00
G. Anderson, for services as janitor in the office of the Secretary.....	30 00
Dr. Alexander, for chemical and microscopical examinations of samples of drinking-water from the county health officers of Pottawatomie, Marion, and Brown counties, and the Reform School.....	70 00
J. A. McLaughlin, for office rent for three months, to December 31st.....	60 00
Expenses of members and the Secretary attending this session of the State Board of Health, as follows:	
Dr. Welch	12 60
Dr. Jones.....	8 00
Dr. Johnson.....	15 05
Dr. Surber.....	7 35
Dr. Schenck.....	4 12
Dr. Redden.....	12 50

The Secretary read a letter from Dr. Roberts stating that he sent a communication to the Governor tendering his resignation as a member of the State Board of Health. Said letter will be found in the Secretary's fourth annual report.

On motion, the Executive Committee were appointed to draft resolutions expressive of the regrets of this Board that Dr. Roberts felt it his duty to take this course, and expressing their appreciation of the high esteem in which Dr. Roberts is held by the members of the State Board of Health, and of the valuable services rendered by him as a member of the Board.

The committee presented the following resolutions:

At a quarterly meeting of the State Board of Health held at Emporia, Kansas, December 6, 1888, the Secretary announced the resignation of Dr. H. S. Roberts, a member of this Board from Manhattan, Kansas. The following action expressive of the feelings of the members of the Board was taken:

While appreciating the pure and worthy motives which prompted the resignation of Dr. H. S. Roberts, believing that he might the better serve the cause of sanitation and medical reform in his private capacity than in official position, yet the members of this Board will sadly miss his safe counsel, his efficient services, always freely given in the work of the Board, and the kindly companionship which endeared him to each of us in the years of our association together.

Resolved, That in the resignation of Dr. H. S. Roberts the Kansas State Board of Health has lost one of its most capable and efficient members, and the State of Kansas a valuable public servant, whose highest ambition was to serve his State faithfully and advance the health interest of the people.

Resolved, That this action of the Board in reference to the resignation of Dr. H. S. Roberts be made part of the record of this Board, and a copy of the same forwarded to him.

On motion, the resolutions were unanimously adopted, and the Secretary instructed to send a copy to Dr. Roberts.

The papers of the members of the Board were postponed, to be read at the Third Annual State Sanitary Convention; the proceedings of which will be published as a supplement to the Fourth Annual Report.

The Auditing Committee made favorable reports on all the bills submitted to them.

On motion, the Board adjourned to meet in regular quarterly session in Topeka, on the second Thursday in March, 1889, at the office of the Secretary.

J. W. REDDEN, *Secretary*.

ABSTRACTS OF QUARTERLY REPORTS

PRESENTED BY THE SECRETARY, AT REGULAR MEETINGS OF THE STATE BOARD OF HEALTH.

FIRST QUARTERLY REPORT.

MR. PRESIDENT, AND GENTLEMEN: Since the last quarterly session of the Board, the Third Annual Report has been completed, placed in the hands of the State Printer, and will soon be bound and ready for distribution. The report will be larger and more interesting than either of the other annuals, containing about 360 pages of information upon all leading and important health topics.

The past year has been one comparatively free from epidemics; and the labors and results of the county health boards have been more efficient and useful than ever. Two counties have organized health boards during the present year, John S. Holliday, M. D., of Coldwater, being appointed Health Officer, in January, for Comanche county, and W. H. Keeney, M. D., of Oakley, being appointed Health Officer, in February, for Logan county: two of the newest frontier counties being thus actively interested in sanitary matters, and showing a willingness to comply with the law guarding the interests of the people in the prevention of disease and the protection of health.

The following communication of the Secretary of this Board and the Secretary of the State Board of Charities in reference to the reports of the Executive Committee and special committees upon the sanitary inspection of the State charitable institutions are herewith submitted as part of this report:

TOPEKA, KAS., JAN. 13, 1888.

Hon. Charles E. Faulkner, Secretary State Board of Charities, Salina — DEAR SIR: Inclosed please find the reports of the Executive Committee of the State Board of Health, giving the results of their visits and examinations of the State charitable institutions, in compliance with the request of your honorable Board. You will please present the same to your Board at their next session. Acknowledge receipt. Will be pleased at any time to receive from you any official communication, expressing any desire of your Board for any further investigation or examination of any of the State institutions by the State Board of Health. Yours truly,

J. W. REDDEN, *Secretary.*

SALINA, KANSAS, JAN. 28, 1888.

J. W. Redden, M.D., Secretary State Board of Health, Topeka, Kas. — DEAR SIR: I have yours of the 18th inst. with the following inclosures, to wit: Report on Institution for the Blind; report on Insane Asylum, Osawatomie; report on Insane Asylum, Topeka; report on State Reform School; report on Institution for Feeble-Minded;

report on State Prison. The last report does not come under the jurisdiction of our Board; the others will be presented for consideration at our next meeting.

I suppose your Board omitted to visit the Deaf and Dumb Institution on account of the special legislative report, bearing upon the location of that institution, following your former report. Yours truly, C. E. FAULKNER, *Secretary*.

The County Health Officers report a more general disposition among the people to appreciate sanitary measures and carry out instructions, and the readiness of proprietors of newspapers to publish sanitary papers and rules and urge upon the people the importance of careful consideration and adoption of them: thus showing a tendency, at least, of the people to acknowledge the existence of health boards who labor for the benefit of the people.

The following questions have been submitted by a county health board for the decision of this Board:

1. Is typhoid fever communicable by contact, either by contagion or infection?

2. Can sanitary measures control to any degree the cause of typhoid fever?

3. Should health officers quarantine cases of typhoid fever?

These questions are well worthy of your consideration and decision.

The following correspondence in reference to what constitutes a nuisance shows the necessity of definite statutory provision on this subject:

OSBORNE, February 20, 1888.

J. W. Redden, M. D., Topeka, Kas.—DEAR DOCTOR: What constitutes a nuisance? What have I to guide me in deciding whether certain things are nuisances or not? In city of second class who are the proper authorities to abate nuisances? Any information on this subject will be most gladly received, as there is considerable controversy, with some prospects of a law suit growing out of it, in our town.

Respectfully,

B. F. CHILCOTT, M. D., *County Health Officer*.

TOPEKA, KAS., February 22, 1888.

B. F. Chilcott, M. D., *County Health Officer*, Osborne—DEAR DOCTOR: Your letter of the 20th received. In reply to the question, "What constitutes a nuisance?" it is difficult to decide, from the fact that the law creating State and local health boards, as well as our statutes, are very weak and defective on that point. If you have a city board of health, they should, under your charter and ordinances, have full authority and power to determine what constitutes a nuisance, and be able promptly to abate or remove the same; otherwise the opinion of the County Health Officer, indorsed by two or more reliable physicians, ought to be sufficient grounds to secure an abatement of said nuisance. Hope your efforts in this direction may be successful, and beneficial to the people. A conference with the city or county attorney, or both, ought to give you proper advice as to the law and mode of procedure upon this question. Write me at your earliest convenience full particulars and results thereof, and oblige. Yours truly, J. W. REDDEN, M. D., *Secretary*.

The following correspondence is submitted to this Board as to the proper qualifications for practicing medicine in Kansas, and whether or not this is a meritorious case authorizing credentials to be issued:

—, KANSAS, February 12, 1888.

State Board Health, Topeka, Kansas—GENTLEMEN: Please let me know what the rules are to get a State certificate are; as I have practiced Medicine in Kansas for

five years, and in that time every case I took where the patients took my treatment and followed my directions, they got well inside of the length of time, that I told them they would: the first case that I took was a young man that had Epilepsy so bad that his parents told me he would be black in the face for four hours in a fit he was also afflicted with paralysis in his left side. I made a Medicine out of 4 herbs that would keep him from going into a fit, if a tablespoonful was given to him just before he went into a fit the last case I took was a lady that would get so cold in the head that her husband told me you can pull the hairs out of my wife's head and she will not feel it. I told him the treatment to use, he told me in a week or two after that his wife was getting better under my treatment. N. B. I then made a medicine out of 12 or 14 different roots and herbs for the young man and he took it for one year he has not had but one fit a year since I know this to be a fact. I also cured the paralysis in his left side. I have not done a great deal of practicing in the 5 years for my parents do not wish me to for fear I will get arrested. I am qualified to practice I know this from the cases I have taken and the success I have had where they have taken my treatment and followed my directions.

Yours respectfully,

———, M. D.

TOPEKA, KAS., February 22, 1888.

———, M. D., ———, Kansas—DEAR SIR: Your letter of inquiry of the 12th received. Inclose please find a copy of the Kansas medical-practice act. Its provisions are clear and plain, and you can readily decide whether or not you are qualified to practice medicine in this State. You should go to the county clerk of your county and register on blanks in his possession for that purpose; then notify the county health officer of your county, if you have one, of your registration. Should there be no county health officer, then notify me, when blanks will be furnished you for all necessary reports. Your attention to this matter will oblige.

Yours truly,

J. W. REDDEN, M. D., *Secretary*.

A sample of melted ice, put up in Hutchinson, from Cow creek, a small stream running through said city, and to be used for family purposes, was sent to this office for analysis by the State Chemist, as to its sanitary condition. The following is the report of the chemist:

TOPEKA, KAS., February 22, 1888.

Analysis of samples sent by Dr. ———, Hutchinson:

Total solids in 1,000,000 parts.....	66.66
Organic matter in 1,000,000 parts.....	24.81
Chlorine in 1,000,000 parts.....	11.98
Albuminoid ammonia in 1,000,000 parts.....	.1087
Free ammonia in 1,000,000 parts.....	.006

This is a very impure ice. A good ice should not contain more than .030 of albuminoid ammonia and 2.50 of chlorine in 1,000,000 parts.

REID ALEXANDER, M. D.

The correspondence of this office, both throughout this State and with other States, has greatly increased; and the clerical labor required is also rapidly increasing.

The registration of physicians and midwives, published in the Third Annual Report, will be found of interest and valuable. Seventy-six counties in the State reported, and the tabulated statements and information is approximately correct, showing 2,439 physicians and midwives, classified as

follows: Regulars, 1,524; eclectics, 382; homeopaths, 197; midwives, 135, and all others, 201.

The following are copies of circulars and blanks issued from this office since the last session of the Board, samples of which were sent to each member:

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, ———, 188—. }

To ——— ———, *Dear Sir:* In accordance with the agreement entered into at the conference of State and Provincial Boards of Health, at Toronto, October 6, 1886, respecting the inter-state notification of the occurrence of cholera, small-pox, and yellow fever, it becomes my duty to inform you of the existence of ——— case— of ———, at ———, in the county of ———, in this State. The origin of the disease is ———.

Yours truly, ——— ———, *Secretary.*

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, January 13, 1888. }

DEAR DOCTOR: I regret that up to this date I have failed to receive your annual report of births, deaths, and marriages, for the year 1887; also your annual report in reference to the sanitary work of your county, with the history of any epidemics or contagious diseases that have prevailed during the past year; the interest generally manifested in sanitary matters, with any suggestions or recommendations that you may think proper, similar to the reports of county health officers, as found in the Second Annual Report of the State Board of Health, and found recorded on pages 116 to 154.

You will please send in said reports before the close of the present month, as I desire to place the Third Annual Report in the hands of the State Printer early in February for publication.

Your prompt attention will oblige.

Yours truly,

J. W. REDDEN, M. D., *Secretary.*

The following circular, issued by the County Health Officer of Montgomery county, is worthy of record, and should be adopted by all the county health officers in the State:

ELK CITY, MONTGOMERY COUNTY, KANSAS, ——— —, 188—.

M— ———, *DEAR DOCTOR:* You will please carefully and correctly report, on the 28th day of each month, all births and deaths occurring in your practice, and all contagious diseases as soon as diagnosis is made.

This organization is yet in its infancy, and requires for its rapid growth and development, the hearty coöperation of all physicians in the county with the County Health Officer, who is in constant communication with the State Board of Health.

Hoping in the near future we may be able to protect the city from the imposition of quacks, and ourselves from such competition.

I am fraternally yours,

J. T. DAVIS, M. D., *County Health Officer.*

The following is a summary of the monthly reports received from county health officers since our last session:

Cheyenne county reports 10 cases of measles, 12 of scarlet fever, 3 of cerebro-spinal meningitis, 7 of diphtheria, 1 of erysipelas, 3 of typhoid fever, 1 of puerperal fever, and 4 of acute lung diseases; 1 death from scarlet fever, 1 from diphtheria, 1 from typhoid fever, and 1 from puerperal fever—

2 of these being under 5 years of age; 11 still-births and 2 marriages were also reported.

Crawford county reports 1 death from scarlet fever, 2 from cerebro-spinal meningitis, 3 from diphtheria, 1 from whooping-cough, 1 from typhoid fever, 1 from puerperal fever, 4 from diarrhoeal diseases, and 3 from acute lung diseases; of these, 7 were under 5 years of age; 12 still-births and 145 births were also reported.

Finney county reports 1 death from measles, 1 from scarlet fever, 1 from diphtheria, 1 from erysipelas, 1 from puerperal fever, and 2 from consumption; 6 births and 10 marriages were also reported.

Miami county reports 1 case of scarlet fever, 1 of diphtheria, and 1 of typhoid fever; that the general sanitary condition is good, and that there are no cases of contagious disease existing in the county at the date of this report.

Pottawatomie county reports 5 cases of diphtheria, and 13 cases of typhoid fever; 1 death from cerebro-spinal meningitis, 3 from diphtheria, 1 from typhoid fever, 1 from puerperal fever, 4 from acute lung diseases, and 2 from consumption; 5 of these were under 5 years of age; 27 births and 33 marriages were also reported. No contagious disease existing in the county at the time the report was sent.

Rawlins county reported 2 cases of measles, 1 case of typhoid fever, 1 case of erysipelas, and 1 case of consumption; 4 births and 4 marriages were reported. The general sanitary condition of the county was very good.

Wallace county reports 1 case of typhoid fever, 2 of erysipelas, and 9 of acute lung diseases; 9 births were also reported. The general sanitary condition of the county was excellent.

As soon as reliable information was received of small-pox existing in the State, I gave official notice of the fact to all the secretaries of State boards of health, according to the agreement entered into at the conference of State and provincial boards of health, at its sessions in October, 1886; and also gave official notice of its location, origin and history as far as known to each health officer in each county of the State, and to the county clerks, where the counties had no county health boards; sending out notices to 32 secretaries of State boards, 79 county health officers, and 24 county clerks.

Two members of the State Board of Health, with the approval of the Executive Committee, were requested to examine the status and management of the disease at Wichita and McPherson, and use all possible influence in enforcing, in conference with the municipal health authorities, all available measures by way of isolation, vaccination, disinfection and quarantine, with the view of its speedy control and extinction.

The President and the Secretary of the State Board had a conference with the Governor, with the view of appointing a special committee from the Board as experts to visit all cases, and urge the health authorities and municipal governments to adopt and carry out all possible rigid measures

for its more speedy suppression and eradication; but the Governor thought we had done our whole duty in the premises, and that the responsibility should now rest with the county and city authorities in the various districts where it had made its appearance or might extend.

The following are the reports of State and county health officers in reference to the existence and prevalence of small-pox in Kansas and other States.

In accordance with the agreement entered into at the conference of State and Provincial boards of health, at Toronto, October 6, 1886, respecting the inter-State notification of the occurrence of cholera, small-pox, and yellow fever, the following official communications have been received from the secretaries of the State boards of health of California, Iowa, Tennessee, Missouri, Louisiana, and Massachusetts:

SACRAMENTO, CALIFORNIA, January 20, 1888.

To J. W. Redden, M.D., Secretary State Board of Health of Kansas: It becomes my duty to inform you that small-pox exists at San Francisco, in the county of San Francisco, State of California, in an epidemic form, and that sporadic cases are scattered throughout the State.

The origin of the disease came on a steamer from China about four months ago, and has gradually spread from that time. G. G. TYBRELL, M.D., *Secretary*.

DES MOINES, IOWA, February 1, 1888.

It becomes my duty to inform you of the existence of a case of small-pox at Washington township, in the county of Jasper, in this State.

The origin of the disease is exposure in San Francisco, California. He was in the eruptive stage when he arrived here. There have been many exposures; vaccination and quarantine have been resorted to. Yours truly,

J. F. KENNEDY, M.D., *Secretary*.

NASHVILLE, TENN., February 17, 1888.

To Secretary State Board of Health, Topeka, Kas.: You are hereby informed that a case of small-pox has been reported to this office at Jackson, in the county of Madison, in this State.

History of case: A young man, resident of Jackson, lately visited Memphis. Origin unknown.

Precautions taken: Case and all exposed isolated. Vaccination and usual means of preventing its spread ordered.

Any further information of importance to you will be promptly communicated.

Very truly yours,

J. BERREIN LINDSLEY, M.D., *Secretary*.

ST. LOUIS, MO., February 18, 1888.

*J. W. Redden, Secretary State Board of Health, Topeka, Kas.—*DEAR SIR: Between twenty and twenty-five cases of small-pox near Kirksville, this State, in Schuyler and Adair counties. Yours truly,

GEO. HOMAN, M.D., *Secretary*.

NEW ORLEANS, LOUISIANA, February 18, 1888.

To Secretary Board of Health, State of Kansas: A case of small-pox has occurred at New Orleans, State of Louisiana.

The origin of the case is unknown. At once removed to the small-pox hospital. Disinfection of premises immediately instituted. Isolation and every precaution maintained.

Yours, most respectfully,

LUCIEN F. SOLOMON, M.D., *Secretary*.

NEW ORLEANS, LOUISIANA, February 24, 1888.

Two cases of small-pox have occurred on board the steamer "Laurestina," at New Orleans, State of Louisiana, February 22, 1888.

Patients were seamen on said vessel, which passed quarantine, from Martinique, February 6, without any suspicious symptoms being present at the time. Cases were at once removed to small-pox hospital; the entire remainder of the crew and officers of the ship were vaccinated and the vessel thoroughly disinfected.

Yours, most respectfully,

LUCIEN F. SOLOMON, M. D., *Secretary.*

BOSTON, MASS., March 1, 1888.

Dr. Redden, Secretary Kansas State Board of Health—DEAR SIR: It becomes my duty to inform you that two cases of small-pox exist at Milton in this State, in the persons of William and Margaret Edwards, residents, mother and son. The origin of the disease is probably from domestic rags, baled in Brooklyn, N. Y.

Respectfully,

SAMUEL W. ABBOTT, M. D.,

Secretary State Board of Health.

Small-pox has also been reported since January 1, 1888, in Connecticut, New York, Delaware, Ohio, Indiana, Michigan, and Wisconsin, making in all fourteen States where small-pox has made its appearance since the beginning of the present year.

The following important facts from Dr. Kennedy, Secretary of the Iowa State Board of Health, are well worthy of thoughtful consideration:

Small-pox is abroad in the land. For some time there have been news items of its existence in San Francisco, California. A few days since official notice was received at this office from the Secretary of the California State Board of Health, Dr. Tyrrell, of San Francisco, that small-pox was epidemic at that place, with sporadic cases in the county. The very next day we received notice of a case of small-pox in the person of Mr. Perry Osgood, living in Washington township, Jasper county, three miles from Mitchellville. Upon the invitation of Dr. A. C. Simonton, we visited the case on the day following, February 1st, and found the case so pronounced and typical that there was no question as to its character. Mr. Osgood left California on the 18th of January and returned to Iowa via Los Angeles, Texas, New Orleans, etc. He stayed over night at Ottumwa, coming thence by way of the C. B. & Q. Railroad to Des Moines, Saturday, January 30. The eruption was then well out on him. He went to Nobleton on the 7 P. M. C. R. I. & P. Railroad train, and thence home—about two miles. Quite a number of persons were exposed in Des Moines and on the railway trains, and in his own family there are the wife and six children, none of whom were vaccinated. Owing to an inability to procure reliable virus at once, this family was not vaccinated until the fourth day after the return of Mr. Osgood, and after their exposure. Prompt and very judicious measures have been taken, however, to prevent the exposed, so far as they are known, from taking the disease, and to prevent further exposures. When Mr. O. went home he was not aware that he had the disease—indeed, was assured that he did *not* have it, and hence the greater exposure in his own family. The children, after being about him, in the room and about his bed Saturday evening, all day Sunday, and Monday morning, went, without any precaution, to the district school. The school has been closed and all exposed persons, so far as known, vaccinated. The local health board of Ottumwa were notified of his having stopped there.

Vaccination has been extensively practiced in Des Moines, and all parties exposed will be quarantined—especially those not having been vaccinated previous to expos-

ure—beginning with the ninth, and lasting to include the seventeenth day after exposure.

The railroad authorities were very prompt and thorough in their efforts to assist the Board. The coaches in which the party rode were sidetracked and thoroughly and frequently disinfected; the passenger waiting-rooms were thoroughly washed—ceilings, walls, floors and seats—with a strong solution of corrosive sublimate; the ceilings and walls were then whitewashed, and the wood-work painted, and the whole thoroughly ventilated. A plentiful supply of vaccine virus has been obtained, the health boards (National) and the local boards of this State have been notified of the outbreak and exposures thereto, and there is but little fear that the disease will assume epidemic proportions. There is every need of faithful and unremitting vigilance—no need for panic. The danger lies not only in this case; but doubtless among the many other Iowa people who have gone to California there will be some others, like Mr. Osgood, who will bring home with them this loathsome disease. So there is not a county in the State, and not a local board in any county, but should be on the lookout for it—should be prepared to recognize it at once, and by timely and general vaccination prevent its spread. Indeed, were vaccination and re-vaccination universal, there would be no material for the disease to prey upon, and no opportunity to perpetuate itself. The main reliance—the *sine qua non* as a *preventive* measure—is vaccination. Without it, there is no protection; with it, there is practically no danger.

Since going to press, Dr. A. C. Simonton, who is in attendance upon the Osgood family, reports that Mrs. Osgood, three of the children, and the hired man, have taken down with the small-pox. Mr. Love, who was the traveling companion of Mr. Osgood in his visit to and return from California, is and has been in excellent health. The beneficent effects of vaccination are illustrated in this case: Here were two men traveling together, equally exposed to the contagion—the one is taken, the other left; the vaccinated one remains well; the other one, not only in his person, but in his family, pays dearly for his neglect.

The following communications are from members of the State Board of Health, county health officers and other sanitarians, in reference to small-pox, now prevailing in the central and southern parts of the State:

WICHITA, SEDGWICK COUNTY, January 29, 1888.

J. W. Redden, M.D.—DEAR DOCTOR: Yours of day before yesterday, asking for the facts about the extent and virulence of small-pox in Wichita, duly received, and I hasten to reply.

The first case came from California to this city on December 24, 1887, and died of the disease. There have been four cases of small-pox and nineteen of varioloid up to this date.

FEBRUARY 14, 1888.—After making further investigations, I have to report more cases of small-pox. There have been up to noon yesterday forty-seven cases. There have been: *white*, five males and eight females; *colored*, twenty-one males and thirteen females—making forty-seven in all, of all ages, from sixty years old to sixteen months old. There have been two deaths—one man thirty years old, and one woman twenty-two years old.

On the 13th, a suspicious "wash-house," kept by some negroes, was investigated, when it was found that small-pox infested the premises.

After the above-mentioned "wash-house" was discovered, all the inmates were removed to the island and the pest-house. There were seven of them. The house, premises and clothing were thoroughly fumigated with sulphur and bichloride of mercury. It is not known how many have been exposed to the disease by this hot-

bed of infection. I advised the destruction by fire of the building. A strict watch will be kept on the neighborhood, and the least indication of a symptom of the disease will be sufficient ground for quarantine. I shall watch the proceedings.

FEBRUARY 22, 1888.—I went to the records yesterday, and find that there have been five cases taken down since I last wrote you: one Indian woman, one colored woman, and three colored males. This is the number since the 23d, up to and including the 21st.

Very truly,

J. MILTON WELCH, M. D.

HUTCHINSON, RENO COUNTY, February 20, 1888.

J. W. Redden, M. D.—DEAR SIR: We had a case of varioloid (a negro) about six weeks ago; we carefully cared for him and took all the necessary precautions. This is all. Hutchinson to-day is in a very healthy condition. *No small-pox.*

The case of the negro: Its origin I do not know; can't be traced. He had a very light attack and rapid recovery; has been discharged, and disappeared to parts unknown to us.

MARCH 2.—We have had but one case of varioloid in Hutchinson, which was reported. *There has been none other.*

Its origin: He was reported to have nursed a case at Wichita, Kas.

Development: The case was diagnosed before the papular stage was fully developed. The patient was promptly taken outside the city limits, placed in a tent, comfortably cared for, and all necessary precautions taken to prevent contact with him. The house in which he was taken sick was thoroughly fumigated and disinfected with sulphur burned on charcoal, and disinfected with carbolic acid and sulphate of iron. All parties exposed were promptly vaccinated, and watched carefully as to their physical condition until all danger of contagion was passed.

The patient made a very rapid and perfect recovery.

Yours truly,

S. H. SIDLINGER, M. D., *County Health Officer.*

WELLINGTON, SUMNER COUNTY, February 24, 1888.

J. W. Redden, M. D.—DEAR DOCTOR: Four cases of small-pox have occurred at Mulvane; one case fatal; also, a few mild cases of varioloid. The cases are now all quarantined, and I think there is but little danger of the disease spreading.

WELLINGTON, SUMNER COUNTY, March 7, 1888.

J. W. Redden, M. D.—DEAR SIR: Immediately after receiving your request for a detailed history of the cases of small-pox at Mulvane, I wrote to Dr. Shelley, the physician who had charge of the cases. I received a note from him, stating that he would send me the report Monday, but it has not yet come.

All the history I have of the cases is that the father of the family (a restaurant keeper) was supposed to have contracted the disease in Wichita. He had been vaccinated, and had a very mild case of varioloid. Three members of his family and a boy who visited there contracted the disease from the father. These cases were all vaccinated after exposure, and had sore arms, or at least the vaccination was beginning to work, when they were taken sick. They were all rather severe cases of discrete small-pox; one was confluent over portions of the body. I do not know the treatment pursued in the cases. They were all moved to a house prepared for a pest-house, except the young man who visited the family. I have not learned whether the girl who died had any complications, neither do I know the ages, nationality, or names, except that the four cases were young persons, between fourteen and twenty-five years of age.

Respectfully yours,

W. O. BARNETT, M. D., *County Health Officer.*

SALINA, SALINE CO., February 29, 1888.

J. W. Redden, M. D., *Sec'y Kansas State Board of Health*—DEAR SIR: Pursuant to your telegraph dispatch of the 24th, ordering me to go at once to McPherson. I

delayed this until the 27th for the following reason: First, we were then having a suspicious case from there who had acted in the capacity of nurse. He was in a colored boarding-house, with a high grade of fever, and his disease was decided by Dr. Tobey on Sunday evening to be small-pox. He was then removed to the pest-house, one mile from city. The result would satisfy me as to McPherson. I secured his services to go with me and to examine some and determine whether it is small-pox or not. His report will be found accompanying this.

They have quarantined as well as they understand, but it is insufficient, as they have no police around either of the hotels or boarding-houses, and the inmates are allowed to go in or out of houses at night as they desire. This is dangerous, as they either may flee from the city or go in private houses and mingle with inhabitants.

The first case appeared about the 11th of January, in a mild form in the north part of the city, and spread from there until it has spread in five dwelling houses and three hotels. If proper quarantine measures had been established, it would have been stamped out in the first case. They have now, by report of mayor, nineteen cases, with four deaths so far; two came down the day before we arrived and one since. I am fearful as to the future, as they had not quarantined in anywise until Monday before our arrival. They were divided, that is, physicians, in the diagnosis at first; most of them now decide it small-pox. This indecision on their part caused the farther spreading of this pest; some even now hold to first diagnosis.

I will suggest for you to confer with the Post-office Department, and have all mails going from McPherson fumigated well. Wichita, Hutchinson, Burrton, and a dozen or more towns along the line of the Atchison, Topeka & Santa Fé Railroad, are reported as having small-pox. Would it not be well for you to ask a weekly report from all health officers for the next thirty or sixty days, until this disease is eliminated?

McPherson is fearful as to the result of this disease reacting on this year's boom; hence they report they have only German measles, chicken-pox, or some other minor disease of no account. Here has been the error altogether. I fully sympathize with them, and hope in a few days matters will be brighter, as they have a fine and well-located city, with a very intelligent population—good enough in fact for a *capital*.

Please answer at once.

Faternally,

J. W. JENNEY, M. D.,

Member State Board of Health.

SALINA, SALINE COUNTY, February 28, 1888.

To Hon. State Board of Health, Topeka, Kas.: At the request of Dr. J. W. Jenney, member of your Board, I visited the city of McPherson on the 27th inst. for the purpose of investigating the small-pox in that city.

Found the city almost in holiday attire, so far as business was concerned, but all wearing an anxious and depressed appearance.

Upon investigation, found that small-pox had existed in the city since the 11th day of January, and is now prevailing in a virulent form. Up to this time there have been four deaths from the disease. The disease was found to be in seven houses located in various parts of the city; three of those houses are hotels or boarding houses. All of those houses are quarantined by the order of the mayor and city council. The number of persons exposed cannot be ascertained. A number that are known to have been exposed are quarantined at various places. A pest-house is about completed, but none of the exposed or afflicted have been removed.

The mayor, by the aid of the city physicians, are doing all they can to keep the scourge under control and avert its progress. Vaccination is being practiced largely by the citizens, and by order of the city government.

N. D. TOBEY, M. D.

McPHERSON, MCPHERSON COUNTY, February 28, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR DOCTOR: In reply to yours of the 25th, I will give as near a concise history of the disease now prevailing in our city as possible. On January 11th I was called, in consultation with Dr. Harvey, to a case of what we diagnosed as chicken-pox. The doctor informed me that the fever had run very high, with a temperature of 104°; on the fourth day it subsided, accompanied by an eruption, which vesicated in the regular order of vari-cella, and was accompanied by a second crop on second or third day. In ten days the case had convalesced; the vesicles had separated and fallen off, without becoming purulent or pitting.

Dr. Harvey was called on the tenth day to treat the landlady for the same disease, which he found in a very mild form; and at about this time one of the boarders changed to the Tremont House, and was taken with the disease in a more malignant form, and transmitted it to five others in the same house; and at about this time the landlady visited the Graham House, and gave it to the landlady and her five children, where it assumed a most malignant form. At about the same time another case was discovered at the Metropolitan, and when investigated, proved to have originated at the same place, and to be very mild. The grandparents of the first patient, who returned to Emporia, were attacked in a mild form, when Dr. Jacobs was called, who pronounced it chicken-pox, which he continued to do for some fifteen or sixteen days, when the third party was attacked, and the doctor became suspicious that he detected symptoms of small-pox, whereupon he called counsel, and still continued to call it chicken-pox until within the last ten days, I understand, they have confirmed it to be small-pox.

We have built a pest-house, are well quarantined, have taken all precautions, and think we have the disease under control. There are some few isolated cases, and I think *in all* about twenty cases. There have been four deaths, one being a consumptive, another an invalid, and one of the children was just recovering from a severe attack of diphtheria; the other was a child one year of age, and the mother was sick, and in fact the whole family. No deaths have occurred, excepting this child, where the disease was not complicated.

Yours truly, W. A. SHELTON, M.D.,
Health Officer of City and County of McPherson.

SALINA, SALINE COUNTY, February 29, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am in receipt of your official notification, of the 27th ultimo, of the existence of small-pox, and lay the same before the Sanitary Committee of the city of Salina, the only body that will actively engage the foe at *either long or short range*. The county physician will not do much. The county commissioners do not know what to do, and failed to appoint a "health officer" in January. Vaccination at Salina is proceeding moderately. A *suspected* case is isolated west of the city. Travel is not interfered with; trains run from McPherson daily. Tickets may not be sold, but passengers get aboard and dismount in the suburbs of each city, and pay conductors on the trains, so that practically travel is not interfered with. I am not "health officer" at present, but will give your letter to the chairman of City Sanitary Committee.

Respectfully yours,
E. R. SWITZER, M. D., *Ex-Health Officer.*

NEWTON, HARVEY COUNTY, March 2, 1888.

J. W. Redden, M. D., Secretary State Board of Health, Topeka, Kas.: I must admit I have been slow in reporting you the progress of our small-pox. The story of the origin of our contagium is about as follows: A man from California came here about

December 20, with the remains of what he supposed was a chicken-pox eruption (and was so treated in California); was sick four or five days. He stayed two or three days with a family by the name of Crow—the family of Crows consisting of wife, himself, and two children, aged respectively three and five years. On or about December 24, the family went twenty-eight miles northwest of here into the northeast corner of Reno county to spend the holidays. While there, the two children had the same eruption (the aforesaid chicken-pox); were only sick a few days; did not have a physician. After their recovery they came home, which is about two miles south of here, and the oldest began going to school in the city. A day or two after they came home, two men by the name of Scott and Finch went out to Crow's place to hunt rabbits; they got pretty cold, and went into the house to get warm; were in the house about thirty minutes. Finch, after about the usual time, came down with varioloid. He is a man of family, consisting of wife and eight children; himself and all the children had it. This is the family the report of which Dr. Chambers makes you. We quarantined the family in their own house, and all others that were exposed directly or indirectly. Did not close the school; but confined it to the one family. Said family has been thoroughly cleaned up, and are at liberty now. No other cases here.

The house at which the Crow family visited was his father-in-law's. After they came home, two of the family—a little girl, don't know the age—and a son aged about 20, had the same eruption, which proved what the eruption was: they had confluent small-pox. I notified the authorities of Reno county, as soon as we suspected what we had here, that I believed they had small-pox; but several days before that, and before the disease had broken out, they had a dance at the house. The next man to show up was the man who played the violin. He had quite a high fever, and they called in a doctor, and in several days the eruption made its appearance, and the doctor called it blood poison. Consequently the neighbors went in and visited him, and helped to nurse him, and the result is we have a number of cases of small-pox in the northwest corner of Harvey county, the northeast corner of Reno and the southwest corner of McPherson county. I know of only four cases in this county, and one other reported yesterday.

I am going out there Sunday again. Have closed all places of public gathering, quarantined all the families, vaccinated all others, and we are doing all we can to check the spread.

NEWTON, March 3, 1888.

J. W. Redden, M. D.—DEAR DOCTOR: I was in the infected district northwest of the city yesterday. No new developments, and all the cases are getting along nicely. Very respectfully, *MAX MILLER, M. D., County Health Officer.*

NEWTON, March 1, 1888.

J. W. Redden—DEAR SIR: Owing to the fact that I did not know I was to make a report until I had finished treating the cases of small-pox, it will undoubtedly be quite imperfect. The following is a statement:

Mr. Finch was taken sick January 18, 1888. His age, 30. Rash appeared January 22d; vesicles appeared January 24th; sore throat, January 24th; pustules, January 29th; crust began to form February 2d; number of days in bed, 6. This, you will note, was a case of varioloid.

Allie Finch, age 5 years, was taken sick February 2d. Papules formed February 6th; vesicles formed February 9th; pustules formed February 11th; scabs forming, February 14th; number of days in bed, 4; number of days took for scabs to come off, 4. This was a light case of varioloid.

Johnny Finch—February 4th; papules formed February 9th; vesicles formed February 12th; sore throat, February 12th; pustules formed February 15th; crusts

formed February 20th; number of days in bed, 7; number of days for scabs to come off, 6. This was a confluent case of small-pox. His age, 4 years.

Ella Finch, age 11 months. Taken sick February 2d; papules formed February 3d; vesicles formed February 6th; sore throat, February 7th; pustules formed February 8th; crusts began to form February 11th; took four days for scabs to come off. This was a case of genuine small-pox.

If there are any further points you may wish to inquire about, I will be pleased to answer. Respectfully,

R. P. CHAMBERS, M.D.

EMPORIA, LYON COUNTY, March 3, 1888.

J. W. Redden, M.D.—DEAR DOCTOR: Yours of the 1st inst. received. In reply. I have to say that we have had one case of small-pox and one of varioloid. The history of the disease is as follows: A Mr. Davis went from here to McPherson with his boy five or six years of age. While there, the child got sick. The doctors called the disease chicken-pox. The child died, and was brought here for interment. Soon after, the father was taken sick, his disease being small-pox. The house was quarantined, flags and posters placed in conspicuous places, and other necessary precautions taken. Some of the other members of the family were sick for a day or two, the symptoms indicating varioloid. A few spots or pits made their appearance on some of them. The others only had high fever, (105°,) and no eruption.

The child that died had not been vaccinated. The father had been, but the vaccine scar did not present a *true* appearance as a protective, and had possibly become effete or worn out. Another boy who was working in the post office was taken sick, and it was said that he was not exposed. He had been vaccinated about the time, or shortly before he was taken sick. From all I can learn of the case, it was a true case of small-pox, modified by vaccination. There has been no further spread of the disease so far as is known up to noon to-day, and it is hoped the disease will spread no further; but we will let time tell. The presumption is that the disease was contracted in the cars, as there was no sign of the disease at McPherson when the child was sick there; but they are having it now. I was reliably informed yesterday that there were thirty cases in Mulvane.

There will be a meeting of the Board of Health on Monday; the County Commissioners will meet on that day. We have invited the City Board of Health to meet with us; the mayor promised me to-day to do so, with the other members of the board.

I am trying to have compulsory vaccination enforced in the city. I hope we will succeed. There are a goodly number being vaccinated, but not near all as yet.

Respectfully yours, R. W. McCANDLESS, M.D., *County Health Officer.*

KINGMAN, KINGMAN COUNTY, March 7, 1888.

J. W. Redden, M.D., Topeka, Kansas—DEAR SIR: Yours of the 6th received. We have five cases of small-pox reported at Spivey, Kansas, by Dr. Gwinn of that place. Spivey is in the south part of Kingman county. They are all isolated, and a mile and a half from any other house. I have given him instructions how to manage them, and hope it will not spread any more. Respectfully yours,

E. W. HINTON, M.D., *County Health Officer.*

The following is a copy of a letter written to the General Managers of the A. T. & S. F., C. K. & N., Mo. Pacific and Union Pacific Railroads in reference to small-pox:

OFFICE OF SECRETARY KANSAS STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, March 5, 1888. }

DEAR SIR: We have been officially informed of the existence of small-pox in Mulvane, Wichita, Newton, Emporia, McPherson and Salina, and in consequence of

neglect or bad management at the first outbreak of the disease many families have been affected, and while precautionary measures as well as isolation and quarantine are being adopted, still there is great danger of the disease spreading by or through the travel and traffic over your lines of railroad through this State. We would therefore earnestly request and recommend that you do not ship food supplies and other freight out of the infected territory, nor receive any passengers from said points to be discharged at points where the disease does not exist. We would therefore urge upon you the probability of this disease spreading to the various towns and counties in the State through which your roads run; and by reason of our great railroad mileage through the State, penetrating the territory of adjoining States, there is an additional danger of Kansas acting as a distributing point to spread this disease to all adjoining States. Such a calamity would cripple travel and paralyze freight traffic on all the lines of railroad west of the Missouri river.

The interest of all railroad companies, as well as the protection of all classes of people from the spread of this loathsome disease, demand that you enforce all precautionary measures against its spread.

Will be pleased to hear from you in reference to this subject.

Yours truly, G. H. T. JOHNSON, M. D., *President*.

J. W. REDDEN, M. D., *Secretary*.

The following is a copy of a letter written to the chief clerk of the Kansas mail service:

TOPEKA, KANSAS, March 5, 1888.

DEAR SIR: We have been officially notified of the existence of small-pox in Mulvane, Wichita, Newton, Emporia, McPherson, and Salina; and that in consequence of neglect or bad management at the first outbreak of the disease many families have been affected, and while all precautionary measures as well as isolation and quarantine are being adopted, still there is great danger of the disease being spread through the mail service to other towns and localities in Kansas where it does not now exist. We would therefore urge upon you the importance and even necessity of having all mail matter received from these points to be carefully and thoroughly disinfected.

In the event you have no established preparation to be used for such purpose, we would suggest one of the following formulas:

I.—Chloride of lime.....	4 oz.
Rain-water.....	1 gallon.
Mix.	

This can be used with great freedom, and is non-poisonous.

II.—Sulphate of zinc.....	3 oz.
Crude carbolic acid.....	$\frac{1}{2}$ oz.
Warm rain-water.....	1 gallon.
Mix.	

This is a valuable and reliable preparation.

III.—Corrosive sublimate....	1 dram.
Common salt.....	3 oz.
Rain-water.....	1 gallon.
Aniline (green).....	1 grain.
Mix.	

The color will show it to be poisonous.

Will be pleased to hear from you in reference to this matter. Your prompt attention will oblige.

Yours truly, G. H. T. JOHNSON, M. D., *President*.

J. W. REDDEN, M. D., *Secretary*.

The following is a copy of a letter written to the health officers of the following counties bordering and adjoining the counties where small-pox prevails: Cowley, Butler, Marion, Dickinson, Ellsworth, Rice, Stafford, Pratt, Kingman, Harper, Ottawa, and Lincoln:

TOPEKA, KAS., March 5, 1888.

DEAR DOCTOR: Since sending you official notice of the existence of small-pox in several counties in central and southern Kansas, additional facts have been received that the disease is extending into the rural districts of several of said counties. There is therefore great danger that this loathsome disease may invade your own county; we would therefore urge upon the health board and leading citizens of your county taking immediate steps to adopt all possible precautionary measures, and if necessary enforce strict quarantine against these infected districts, thus leaving no precautionary measures untried to prevent the introduction and spread of the disease into your own jurisdiction.

Should any case of this disease appear in your county, report the same to this office at once, either by letter or telegraph.

Your prompt attention to this important matter will oblige.

Yours truly,

J. W. REDDEN, M. D., *Secretary.*

This is a condensed statement of small-pox as it has been reported to this office, and a summary of the efforts of the Secretary and the Executive Committee to enforce all possible sanitary measures, through municipal and county health boards, to check its progress and effectually stamp it out. We believe everything has been done that can be accomplished under the limited power conferred upon the Board by the law creating State and local health boards.

We hope that the sad and unexpected epidemic of this loathsome disease may be the means of educating the people and the legislators to see the necessity as well as importance of passing special health laws that will clothe the State Board of Health with ample and unquestioned power and authority, backed with adequate funds to meet any emergency of any contagious disease, and be able to throttle it at its very incipency, and stamp it out at the very threshold of its appearance, and by such a course prevent panics, avert distress, change darkness into sunshine, and promote the health and prosperity of individuals and communities.

Respectfully submitted.

J. W. REDDEN, M. D., *Secretary.*

SECRETARY'S SECOND QUARTERLY (FOURTH ANNUAL) REPORT.

Mr. President, and Gentlemen: We assemble to-day to celebrate the fourth annual meeting of the State Board of Health. The work of the Board has been gradually but regularly extending its domain, influence, and beneficent results to all parts of the State. Slow but sure, upward and onward, is the aim, object and history of all similar organizations.

The general good health of the past quarter has been remarkable through-

out the State. While it has been apparently free from general epidemics, yet those which have prevailed (especially small-pox, scarlet fever, and diphtheria) have had a retarding and in some instances paralyzing effect upon trade, commerce and travel in some localities. It is not too much to say that the State Board of Health, through its conference, suggestions and assistance with and to county and municipal health officers and county clerks, has exercised a healthful and beneficial influence in controlling, suppressing, and even preventing the spread and fatality of these dreaded plagues, and thus, indirectly at least, contributed much to the prosperity of business circles, and the comfort and security of communities.

The Third Annual Report of the State Board of Health has been more generally distributed than either of the previous reports; and letters are received weekly, requesting copies, from sanitarians not only in our own State, but from most of the other States, foreign provinces, and individuals. While the report is not as complete as could be desired, yet it seems to be a creditable volume, and appreciated by those who have examined it. Letters of commendation have been received from secretaries of older State boards and prominent sanitarians; an extract from a few may be in place here.

Dr. Cox, of Denver, Secretary of the State Board of Examiners of Colorado, writes: "I wish to congratulate you upon the really beautiful manner in which the Report is brought out. The volume is one of unusual neatness, and for a third annual report it is of remarkable interest."

Dr. Rauch, Secretary of the Illinois State Board of Health, says: "Your Third Annual is a decided improvement over previous reports; I am much interested in your report of physicians and midwives."

Dr. Pelletier, Secretary of the Montreal Board of Health, Province of Quebec, says: "I was greatly honored by receiving your Third Annual. It will not only remind me of your kindness, but will stand as a proof of the ability of the Secretary and members of the Kansas State Board of Health."

And Dr. Reed, Secretary of the Ohio State Sanitary Association, writes: "From an examination of the report it shows great work and careful preparation."

These and similar expressions are indications that the labors of the Board are not only appreciated, but will produce good results.

The press throughout the State has been of material service in showing a readiness to publish all important health circulars and pamphlets, and urging upon its readers to pay diligent heed to the suggestions made and the information given for the benefit of the individual, the home, and communities. The press is a power in directing and educating the people that we should appreciate in full measure.

Since our last session, the County Commissioners of Barber county appointed L. B. Gillette, M. D., County Health Officer of their county; E. C. Loomis, M. D., of Millbrook, has been appointed County Health Officer of

Graham county, in place of H. J. Fuller, M. D.; C. G. McKinley, M. D., has been appointed County Health Officer of Johnson county, in place of H. C. Hastings, M. D.; C. A. Loose, M. D., of Peabody, has been appointed County Health Officer of Marion county, in place of J. W. Hannaford, M. D.; and J. M. Rogers, M. D., of Pratt, has been appointed County Health Officer of Pratt county, in place of Thomas McElwain, M. D.

The following circular letters and pamphlets have been issued from this office since our last session; copies of each were sent to every member of the State Board:

First, "Small-pox; its Prevention and Restriction."

Second, Circular letter to county health officers in reference to its circulation and publication.

Third, Same to county clerks.

Fourth, Circular letters in reference to the enforcement of the law requiring the prompt and correct returns of deaths.

Fifth, Circular letters to county health officers, county clerks, and secretaries of State boards of health, as to the proper distribution of the Third Annual Reports.

The following is a copy of the pamphlet issued in relation to small-pox:

SMALL-POX: ITS PREVENTION AND RESTRICTION.

Small-pox is always the result of infection. The specific poison which is the cause of the disease is very active; a momentary exposure to it will often result in producing small-pox in the unprotected, and the vitality of the infection, under certain circumstances, is capable of being preserved a long time. The disease is dangerous and loathsome in the extreme, giving a high death-rate in the unvaccinated, and hideously disfiguring and maiming many who outlive it.

The present generation can have, from its own observation, no adequate conception of the terrible devastation which this disease caused before the discovery of vaccination. In the large cities one-third of the deaths of children under ten years of age came from small-pox. "Not a decade passed in which this disease did not decimate the inhabitants in one country or another, or over great tracts of country: so that it came to be more dreaded than the plague." In France 30,000 persons died annually from this disease; and in the whole of Europe from 400,000 to 450,000 perished yearly from the scourge. In Westphalia, where the death-rate from small-pox was formerly 2,643 in the million population, the annual mortality from the same cause declined to an average of 114 in the million from 1816 to 1850, under the influence of general vaccination. In Berlin, the reduction was from 3,422 to 176; in Copenhagen, from 4,000 to 200.

These facts will give us some idea of the benefit which has been conferred upon humanity by vaccination. Without the protection which it affords, nearly, if not quite, the olden, fearful rate of mortality would, in the course of a generation or two, be restored. Cleanliness and the observance of the general laws of health might avail a little, but only a little, in restricting this disease, which always seems to have its being in infection.

In a community or town well and thoroughly vaccinated there would be no possibility of a serious extension of small-pox. Neglect of this protection has, even in recent years, sometimes led to very disastrous and unprofitable results. Such a

course in Philadelphia, in the winter of 1871-2, cost the city in lives and paralyzed business twenty million dollars. And such neglect of vaccination in Montreal, lately, imposed a heavy penalty on that city and its surrounding province, and at the same time seriously threatened all adjoining States.

PREVENTION.

The all-important preventive measure is *vaccination*. In the face of the disease, vaccination, isolation and disinfection must go hand in hand.

Every child should be vaccinated in its earliest years, preferably before six months of age; and in case of danger of infection, the vaccination should be done at once, no matter how young the child is. Vaccination should be done again before puberty, and better before ten or twelve years of age; afterward vaccination should be *tried* as often as every six or seven years, or oftener if the person is subjected to probable danger of small-pox contagion. It is also recommended that every person when successfully vaccinated, should be revaccinated every twenty-first day thereafter until it ceases to produce any effect upon the person.

Vaccination should be done only by competent physicians, and only with vaccine virus of undoubted reliability and purity; otherwise a sense of security is often felt, when in fact protection is not obtained.

Should vaccination be made in only one place, or in several? is sometimes asked. The following, based upon the examination of 5,000 cases of small-pox in England, answers the question strongly in favor of inserting the virus in several places in the arm:

Percentage of deaths in —

1. Unvaccinated.....	35 per cent.
2. Vaccinated :	
Having one vaccine scar.....	7.73 per cent.
Having two vaccine scars.....	4.70 per cent.
Having three vaccine scars.....	1.95 per cent.
Having four vaccine scars.....	0.55 per cent.

In case of the presence of small-pox, immediate and careful vaccination should be made of all persons who have not recently been so protected. Even after known exposure to the disease, vaccination should be done any time before the actual appearance of the eruption. If done two or three days after exposure, it will often prevent the disease, or make it much lighter; and done later, there is reason to believe that even then it has a salutary effect upon the course of the disease.

Small-pox is a contagious disease which usually can be suppressed only by the prompt action of the health authorities, assisted by the coöperation of the people. It is the duty of all health authorities to be prompt and vigorous in enforcing such well-advised measures in the care of those who may unfortunately become afflicted (and of their families and households), as will prevent any spread of the disease. Under no circumstances must such cases be allowed to go at large, or be sent away to escape the cost and care of their proper treatment.

Concert of action between neighboring towns or communities, whose sanitary interests are often identical, is strongly enjoined upon the health authorities. Friction, clashing of authority, and unnecessary expense may thus be avoided. Where there is no medical man upon a board of health, the advice and coöperation of the county medical officer should be secured; or, if this be impracticable, a competent and legally-qualified physician should be employed. If a district or locality becomes seriously infected, better work will be secured, with less danger of the contagion being spread, if such district or locality be put in charge of one medical officer, instead of allowing several physicians to visit individual patients or families. Such

officer should be selected with an eye not only to his medical skill and experience, but also to his knowledge and ability as a sanitary executive.

Local boards and authorities are strongly advised against the policy of concealment. Small-pox cannot be suppressed by denying its existence. It will out, more certainly than murder. Official reticence in this is not only useless to protect commercial interests and reputation, but is in the highest degree mischievous, in that it begets false confidence which may lead the innocent and unwary into such danger as an honest announcement of the facts would have warned them to avoid. Insist upon prompt publicity in every instance.

County and municipal health boards should report at once the presence of each case of contagious disease to the State Board. In case of small-pox, it is the desire of the Board that its presence at any place be reported by telegram. Should the disease assume the proportions of an epidemic, all public assemblies, such as churches, schools, and gatherings of any kind, should be interdicted by the authorities. They are justified in law to take this step.

When a case appears, immediately enforce strict isolation and quarantine of the patient, and this should be continued for at least two weeks after the recovery of the case, and after the crusts have all separated. When the patient cannot be removed to a hospital, but must remain in a private house, secure a room, if possible on the uppermost floor, and remove from it all articles and furnishings which will not absolutely be needed. For a nurse have some person who has been recently and successfully vaccinated, or who has had the small-pox. Keep all others away from the room. All other persons in the house and neighborhood should immediately be vaccinated. In case of death, the funeral should be strictly private, and conducted under the direction of the board of health, health officer, or the attending physician.

The disinfection should also be done under the same authority. During the sickness all discharges from the patient should be plentifully treated with Disinfectant No. 5, No. 6, or No. 2, and then buried. All crusts should be burned.

Clothing should be immersed in Disinfectant No. 4, or No. 5, and then subjected to prolonged boiling. All articles which cannot be surely disinfected must be burned.

If death should occur, the body should immediately be wrapped in a sheet wet with Disinfectant No. 5, or No. 4, and prepared as soon as possible for private burial.

The room and house should be very thoroughly fumigated with Disinfectant No. 1, and renovated with paper, paint, and whitewash.

DISINFECTANTS.

No. 1. Sulphur Fumigation.—To use this effectively, two pounds of sulphur should be burned in a room ten feet square. Every opening into the room, flues, doors, windows, cracks and crevices must be closed, except the door by which the disinfecter is to escape. The sulphur is to be burned in an iron kettle or other vessel, set in a tub containing a little water, to guard against fire. A little alcohol or kerosene must be poured upon the sulphur, by means of which it may be ignited. Leave the room quickly, for the fumes are highly poisonous when breathed, and close the door tightly. Let the room remain closed for twenty-four hours or more, then air thoroughly for several days.

No. 2. For the Discharges.—Sulphate of iron (copperas), 3 pounds; warm water 1 gallon; mix. This leaves rust spots on clothing.

No. 3. For Privies, Cess-Pools, etc.—Sulphate of iron, $1\frac{1}{2}$ pounds; warm water, 1 gallon, mix.

No. 4. For Clothing.—Sulphate of zinc (white vitriol), 4 ounces; common salt, 2 ounces; water, 1 gallon; mix.

No. 5. Corrosive Sublimate Solution.—Corrosive sublimate, 60 grains; permanganate of potassa, 1 grain; water, 1 gallon; mix. Corrosive sublimate is one of the surest destroyers of disease germs known, but its dangerously poisonous qualities make it unsafe for general use. It could be used instead of No. 2, or one-half this strength instead of Nos. 3 and 4.

No. 6. Chloride of Lime Solution.—Chloride of lime, of the best quality, 4 ounces; soft water, 1 gallon; mix. This is one of the best and cheapest disinfectants.

No. 7.—Boiling for half an hour is the surest way to destroy infection. Immersion in No. 4 or No. 6 will lessen the danger from infected clothing until it can be boiled, which should be done as soon as possible.

Please preserve for future reference.

The circulars relative to the restriction and prevention of small-pox will be sent to any address on application, and the State Board of Health will coöperate with local boards for the control of this and other diseases, to the full extent of its power.

J. W. REDDEN, M.D., *Secretary.*

Following are copies of the circular letters referred to on page 29:

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA, KAS., March 15, 1888. }

DEAR DOCTOR: I send you by mail to-day several pamphlets on "Small-Pox: its Prevention and Restriction." They are intended for general distribution, not only to physicians, but to any family who may desire them. I send you also several circular letters, intended to be sent to every practicing physician and midwife in your county, the object of which is clearly explained.

Your prompt attention in distributing them and carrying out the instructions contained therein is very necessary. Try and get your county papers to publish both the pamphlet and the circular letter, as news that may be of special interest to all their subscribers; especially the pamphlet on small-pox.

Should more of either the pamphlets or circulars be needed, write me the number and they will be sent to you promptly. Acknowledge receipt of package.

Yours truly, J. W. REDDEN, M.D., *Secretary.*

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, March 15, 1888. }

DEAR SIR: I send you by mail to-day several pamphlets on "Small-Pox: its Prevention and Restriction." They are intended for general distribution, not only to physicians, but to any family who may desire them.

Your prompt attention in distributing them and carrying out the instructions contained therein is very necessary. Try and get your county papers to publish this pamphlet on small-pox as news that may be of special interest to all their subscribers. I send this package to you for distribution, as your County Commissioners have failed to carry out the provision of the law requiring them to appoint a county health officer for your county.

Should more of these pamphlets be needed, write me the number, and they will be sent you promptly. Acknowledge receipt of package.

Yours truly, J. W. REDDEN, M.D., *Secretary.*

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, March 15, 1888. }

DEAR SIR: The Kansas State Board of Health, at its recent quarterly session, instructed the Secretary to issue a circular letter and request every county health officer in the State to send a copy of the same to every practicing physician and

midwife, calling their attention to section 9 of the law creating State and local boards of health, which is as follows:

"SECTION 9. It shall be the duty of every physician practicing his profession in the State of Kansas to keep a record of the deaths occurring in his practice, or that may come to his knowledge, where death occurs without medical attendance, noting the form of the disease, and as far as possible the cause which produced it, and to report the same to the local board of health where the same occurs, at the time and in the manner prescribed by the State Board of Health; and any failure to do so will subject said physician to a fine of ten dollars for each and every offense."

The County Health Officers are requested to report the names of all physicians and midwives who fail or neglect to make regular reports to him of births and deaths, as required by said law to do, to the County Attorney, and request him to enforce the penalty as provided in said law.

Your prompt and regular attention to said reports will be of material service in rendering the vital statistics accurate and reliable, and save any trouble and annoyance in the way of litigation. Yours truly, J. W. REDDEN, M. D., *Secretary*.

SECRETARY'S OFFICE, KANSAS STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, May 14, 1888. }

DEAR DOCTOR: I send you by express to-day, charges prepaid, twelve copies of the Third Annual Report of the Kansas State Board of Health. The cloth-bound copy is for your own use. Give one copy to each of the county commissioners, the county clerk, the county attorney, the county superintendent of public instruction, and the probate judge, and distribute the remaining four copies to those persons who you think will appreciate them, and use them for the benefit of the public.

Acknowledge receipt. Yours truly, J. W. REDDEN, M. D., *Secretary*.

SECRETARY'S OFFICE, KANSAS STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, May 14, 1888. }

COUNTY CLERK—*Dear Sir*: I send you by express to-day (charges prepaid) twelve copies of the Third Annual Report of the Kansas State Board of Health. The cloth-bound copy is for your own use. Give one copy to each of the county commissioners, the county attorney, the county superintendent of public instruction, and the probate judge, and distribute the remaining five copies to those physicians who will appreciate them and use them for the benefit of the public.

Acknowledge receipt. Yours truly, J. W. REDDEN, M. D., *Secretary*.

SECRETARY'S OFFICE, KANSAS STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, May 14, 1888. }

DEAR DOCTOR: I send you by express to-day, charges prepaid, one package containing two cloth-bound copies and three paper-bound copies of the Third Annual Report of the Kansas State Board of Health. One of the cloth-bound is for the library of your State Board of Health, the other is for your private library. The three paper-bound copies of the Third Annual Report of the Kansas State Board of Health are for distribution among the members of your State Board.

Will be pleased to receive like exchanges.

Acknowledge receipt. Yours truly, J. W. REDDEN, M. D., *Secretary*.

Winter cholera having prevailed very extensively and with some fatality in cities along large water-courses in other States, and presenting some features of marked peculiarity and interest, and learning of its prevalence at Atchison, Leavenworth, Wyandotte, and Kansas City, all bordering on the Missouri river, I prepared the following circular and questions in reference to it, and after consultation with members of this Board, sent copies of same to representative and prominent physicians of each school of medicine at

each of the above cities, and requested full and complete reports of cases occurring in their respective practice. I received reports from Dr. Diederich, of Kansas City, Kansas; Dr. Lane, of Leavenworth; and Dr. Gray, of Wyandotte.

The following are the circular and reports:

WINTER CHOLERA.

TOPEKA, KANSAS, March 20, 1888.

In several towns in Kansas there has prevailed, and in some localities is still prevailing, an affection not unlike the cholera morbus of the summer months. It affects all classes, chiefly adults, and has proven fatal in several cases. From a sanitary standpoint, we believe a thorough investigation should be made, to ascertain, as correctly as possible, the causation and prevention of this disease. With this end in view, we think it very desirable that a careful study should be made of the history of the outbreak in all its aspects, causation, symptoms, pathology, prevention, and management.

This disease has also prevailed very extensively in Minneapolis, Minn. At the autopsy of two of the victims, a man and a woman, the only abnormal condition present was localized congestion of portions of the small intestines. In neither had it gone to necrosis of the mucous membrane, nor was there any marked change in the glands or Peyer's patches of the intestinal track. There were some twenty physicians present, and there was a free exchange of opinions as to the character and probable cause of the malady, but very little agreement as to either.

Health officers and physicians to whom this circular is sent will find a series of questions which indicate the points upon which information is asked. Individual experience will of course vary, so that it is impossible to do more in such a paper than to suggest the outlines of inquiry, relying, as we do with confidence, on the coöperation of our professional brethren in a matter of so much general interest.

Will all who receive this letter answer the inquiries on extra sheets of paper, and make their report as complete as possible? If you have seen no case, send a postal-card to that effect.

Please avoid confounding this affection with the sporadic cholera morbus not unusual at this time of the year.

The following questions indicate the character of the information desired. An early reply will enable me to condense the facts for the next session of the Kansas State Board of Health for publication in the annual report.

Assuming that you have had cases of this disease in your practice—

1. When did the first case appear?
2. Was the patient away from home within two weeks, or shorter period, of attack where and when?
3. What were the first indications of sickness, their duration, and the succeeding symptoms? Tell the termination of the case.
4. Any other cases in the same family? Describe.
5. What relation did you find to exist between the disease, in any case, and the sanitary surroundings?
6. How many cases have you had; sex, age, condition?
7. Average duration of the attack, and proportion of relapses, if any?
8. Number of fatal cases, with any details, including post mortem?
9. Take your experience as a whole, state your conclusions, as to etiology, and the means most likely to prevent or control the disease?

Your prompt attention will greatly oblige. Yours truly,

J. W. REDDEN, M. D., *Secretary.*

Following are the responses received to this circular:

WINTER COLIC.—(*By P. Diederich, M.D.*)

KANSAS CITY, KANSAS, May 11, 1888.

J. W. Redden, M.D.—DEAR DOCTOR: I promised to you a paper on "Winter Colic." but I am sorry to say that I was kept so busy at the time, and have not written anything yet on the subject. I think it hardly necessary to devote much labor on it, as it has passed away entirely, and during its prevalence was throughout mild in character, yielding readily to the proper selected remedies, without leaving any evil effects on the system after the acute attack was over. I think the exciting cause was atmospheric, and not in the water or food. Its tendency was undoubtedly choleraic, and if our population at the same period had been visited by Asiatic cholera, we would have had an epidemic of the most virulent and malignant character. But thanks to the Providence of the Almighty and the vigilance of our Government, the monster, which is bred and born on the banks of the Ganges, has been kept away from our country so far.

STATISTICS ON WINTER CHOLERA AT LEAVENWORTH.—(*By J. A. Lane, M.D.*)

The first cases appeared here about the first of February. No one kept a record of cases, but all can remember having cases at this time.

We do not know that any patient was away from home at any time previous to the attack. The indication of sickness was a sudden, profuse diarrhœa, with no premonitory symptoms. Duration in most cases from five to fourteen days. In some families there were one, two or three cases, and in others all the members were sick. We could find no relation between the disease and the sanitary surroundings; found it in all classes, ages, sexes and colors.

I have probably had two hundred cases. This includes those at the county jail, county poor-house, Orphan Asylum, and Home for Friendless Women. I find the average duration of attack to be five days, the proportion of relapses about one-third. There have been no fatal cases recorded. In addition, on inquiry, we find that many cases occurred that did not consult a physician—either treated themselves, had no treatment, or called on their favorite druggist for some patent medicine.

From the druggists inquired of, it is fair to estimate that from one hundred and fifty to two hundred cases were treated at each of from twenty to thirty drug stores. The disease is still prevalent at this place, though to a limited extent. Some cases lasted over six weeks.

The above includes the observation of nearly all the physicians of this place, I having taken the list of questions and called on them, those who have any practice established in their ideas concurring in some of the points brought forth by the list.

From the unorganized condition of the physicians here, it was hard to get much from them, for fear of committal, and from the fact that each had not personally been called on to give his report to the Secretary.

WINTER CHOLERA.—(*By George M. Gray, M.D., of Wyandotte.*)

J. W. Redden, M.D., Secretary State Board of Health—DEAR SIR: Yours of the 20th instant to hand. In reply I will state that it will be impossible for me to answer all of your questions accurately, as I have kept no record of cases; but will try and give you what information I can, and later may be able to give you something more definite. The first cases that I saw occurred about February 1st, at what is known as the Quindaro Water Works; they are located in the Missouri river bottom about two miles above this place. About February 1st, several persons working and

living there were attacked with diarrhea; there was nausea in all the cases and vomiting in one. There were twenty or thirty persons living at this place, all of whom suffered from the disease, more or less during the month of February. Relapses are frequent, occurring in more than half of the cases that have come under my notice. I have had a number of cases in men who are employed at Fowler's, Plankinton & Armour's, and Dold's packing houses. Most of the cases that I have seen occurred in persons living or working in low places (bottoms).

From what I have seen of the disease, I regard it as miasmatic. I have seen at least forty cases during February and March. Have three cases on hand at present. One I saw this morning for the first time; he gives the following history:

J. McK., Irish, age 21, laborer; works at Fowler's packing-house. Felt well until 5:30 P. M. March 24, when felt slight chilliness, followed by nausea and vomiting; vomited about 6 P. M. Bowels moved in ten minutes after vomiting. Seven passages from the bowels during the night, becoming quite watery after the second passage; had severe griping pain in the bowels after 1 A. M.; passed no water during the night, and only about two ounces during eighteen hours. Pulse, 90°; temperature 98 (in mouth) at 11 A. M., March 25. Bowels had not moved for four hours. The stools are always watery, and yellow or slate color; there is usually great thirst.

In the majority of cases that I have seen, there has been no elevation of temperature, the temperature usually being slightly below normal; in two or three cases the temperature was elevated, 101° about the highest.

I had one case prove fatal after an illness of five weeks, with the following history: A. L., age, 40; stock-buyer at Kansas City stock yards. Had not been well for seven months; suffered from catarrh and dyspepsia; lost forty pounds during last seven months, up to the time he was attacked with diarrhea. I first saw him March 8, 7 P. M., he having been under the care of homeopathic physicians for two weeks on account of diarrhea. When I first saw him he was in a state of collapse—no pulse at wrist, very restless, bowels moving every two or three hours, large watery passages; temperature 97° Fah. in axilla; tongue dry, smooth, and glazed. By the liberal use of stimulants he reacted, and the next day had pulse of 100, temperature 98; gave astringents and opium to control bowels, but had great difficulty in giving medicine on account of vomiting. March 19 and 20 bowels did not move at all, but there was constant nausea. Bowels commenced moving on the 21st again; passage same character as before, slate color, very thin; constant nausea with occasional vomiting; and he died March 23.

Autopsy 18 hours after death (Dr. Haldeman was present at the autopsy): Body very much emaciated; on opening the abdominal cavity we found the omentum very much injected; the whole intestinal canal was congested, most marked in the duodenum and lower portion of ileum; there was no ulceration of any portion of the intestines; the stomach was dilated very much, and walls thin, with marked congestion of pyloric extremity, with large ecchymosis; liver was somewhat fatty; spleen very small, weight about 1½ ounces; the kidneys were about normal in size and appearance. I suppose the stomach had been dilated for several months, as he had suffered with vomiting after eating for about seven or eight months.

The case was not a good case, as there was evidence of such extensive chronic trouble. But I believe that death was directly due to this disease called winter cholera.

In regard to treatment of these cases, I think I have had the best results with large doses of bismuth, 20 grains with opium in full doses; the stomach is usually so irritable that you must be careful what you give. With this imperfect reply to your inquiry, I will close.

While the small-pox was so prevalent in California, and gaining a foothold in several localities in this State, I thought it advisable, after a conference with the Executive Committee of this Board, to issue the following circular letter to the managers of railroads in Kansas, with a view of preventing the spread of the disease, and protecting, as far as possible, the traveling public. Said circular was kindly received and politely considered, and generally observed, as the following communications will show:

TOPEKA, KANSAS, March 5, 1888.

DEAR SIRS: Your attention is called to the following from the Secretary State Board of Health, California: "*Small-pox in San Francisco in an epidemic form, and sporadic cases are scattered throughout the State.*"

Will you, therefore, immediately call the attention of your conductors, and those of the sleeping cars, bringing California passengers this way, to the necessity for careful supervision of all cases of sickness, particularly of *eruptive disease*, in such passengers coming to Kansas.

Please instruct them to notify me at Topeka, by railroad telegraph, of any such cases, actual or reported, before arrival in this State, if possible, that I may instruct local health officers to inspect and report, and save you unnecessary delay and trouble. Please understand that it is *safety* which we require, and that we will coöperate to prevent useless alarm, or suspicion and delay, if you will aid us as above requested. Make the rule, in case of doubt, to consult the nearest railroad physician, outside of Kansas; and if in this State, notify Dr. Redden, by telegraph, at Topeka.

An early reply is asked, that we may know the coöperation we may expect.

Yours respectfully,

J. W. REDDEN, M. D.,

Secretary State Board of Health.

To Managers of Railroads in Kansas.

THE CHICAGO, KANSAS & NEBRASKA RAILWAY CO., }
TOPEKA, KANSAS, March 9, 1888. }

J. W. Redden, Esq., Secretary State Board of Health, Topeka, Kansas—DEAR SIR: In reply to communication from the State Board of Health under date of March 5th, I have the honor to state, while the managers of this company are as anxious as persons well can be to prevent the spread of contagious diseases in the State, we are advised that we have no authority whatever to quarantine any town upon our line, or to comply with other suggestions made in your letter. We shall try to do what we can, legally, to prevent the spread of disease, and will be glad to coöperate with your Board in any action having this end in view.

Very respectfully,

H. A. PARKER, *Vice President and General Manager.*

TOPEKA, KANSAS, March 21, 1888.

J. W. Redden, M. D., Secretary State Board of Health, Topeka, Kansas—DEAR SIR: In reply to yours of yesterday: Inasmuch as this company does not run any trains through to or from California, nor make any connections with California trains, there can be no danger from small-pox, as alluded to in your letter, so far as this road is concerned.

Yours truly,

H. A. PARKER.

ATCHISON, TOPEKA & SANTA FÉ RAILROAD COMPANY, }
OFFICE OF GENERAL MANAGER, TOPEKA, KANSAS, March 10, 1888. }

Dr. J. W. Redden, Secretary State Board of Health, Topeka, Kansas—DEAR SIR: I am in receipt of your favor of the 5th inst., requesting that action be taken to pre-

vent the spread of small-pox in the State by discontinuing the sale of tickets at Mulvane, Wichita, Newton, Emporia, McPherson and Salina.

This subject has received careful consideration, and I am advised by our attorneys that we cannot legally decline to transport persons to and from any point when such persons board our trains and offer to pay their fares. Nothing could, therefore, be gained by discontinuing the sale of tickets at the points named, but such action on our part would undoubtedly have a reverse tendency and be likely to create a stampede from such points as were quarantined in this manner. We shall be glad to take any steps that would be likely to aid you in your work to prevent the spread of disease, but we cannot do so by discontinuing the sale of tickets. It would seem to me eminently proper that the Board of Health should station quarantine officers at the infected towns.

Yours truly,

J. F. GODDARD.

TOPEKA, KANSAS, March 21, 1888.

Dr. J. W. Redden, Secretary State Board of Health, Topeka, Kansas—DEAR SIR: This is to acknowledge receipt of your favor relative to reporting cases of sickness of passengers from California. All necessary instructions will be given our trainmen, as requested.

Yours truly,

J. F. GODDARD.

THE MISSOURI PACIFIC RAILWAY CO., EXECUTIVE DEPARTMENT, }
ST. LOUIS, March 16, 1888. }

Drs. G. H. T. Johnson, President, and J. W. Redden, Secretary, Kansas State Board of Health, Topeka, Kansas—GENTLEMEN: Your letter of the 5th instant, relative to quarantining against small-pox in Mulvane, Wichita, Newton, Emporia, McPherson, and Salina, Kansas, received, and has had my careful attention. Replying to which, would state our attorneys advise we cannot legally decline to carry passengers who may board our trains and offer to pay fare. For this reason it does not seem advisable to stop ticket sales from the towns said to be infected. Such stoppage might cause a stampede from the towns in question, which would be more effective in spreading the disease than the ordinary travel. The stationing of a quarantine officer at each of the infected towns by your Board would doubtless be more effective than the withdrawal of tickets by the railways.

We do not desire to be understood as opposing any measure for the public good, but merely call attention to the legal difficulties in the way of carrying out the suggestion contained in your communication.

Yours truly,

S. H. H. CLARK, *First Vice-President.*

ST. LOUIS, MO., March 22, 1888.

J. W. Redden, Esq., Secretary State Board of Health, Topeka, Kas.—DEAR SIR: Replying to your letter of the 28th inst., relative to measures for prevention of spread of small-pox through transportation of passengers from California, advise: we will heartily cooperate with your Board in making a careful supervision of all cases of eruptive disease appearing among passengers upon our sleepers from California. As the entire through travel from California, over our line, reaches your State over the Missouri, Kansas & Texas Railway, instructions have been given to Mr. J. J. Frey, Superintendent, to instruct his conductors to act in accordance with the suggestions contained in your letter. Trusting these may result in the prevention of the spread of the disease through the source referred to, I am,

Yours very truly,

S. H. H. CLARK, *First Vice-President.*

I also wrote the Superintendent of the Mail Service in Kansas, with the suggestions of disinfecting the mail service as a precautionary measure and

proper safeguard against the spread of the disease through that channel. The following communication will show the result of said correspondence:

RAILWAY MAIL SERVICE, }
KANSAS CITY, MO., March 8, 1888. }

J. W. Redden, M. D., Secretary of State Board of Health, Topeka, Kansas—DEAR SIR: I have to acknowledge the receipt of your favor of the 5th instant, and to advise that the matter has been referred to Superintendent Thomas, St. Louis, Mo., with the recommendation that the suggestions contained therein be adopted at once, in order not only to protect persons connected with the service, but other communities. I have no doubt but what some such plan will be inaugurated as soon as practicable. In case the disinfection is decided upon, it will be necessary for one of your local health officers to supervise the same. Yours respectfully,

G. W. HUNTER, *Chief Clerk.*

RAILWAY MAIL SERVICE, }
OFFICE OF SUPERINTENDENT, SEVENTH DIVISION, }
ST. LOUIS, March 16, 1888. }

Respectfully referred to J. W. Redden, Secretary, Topeka, Kansas: Please note precautionary measures taken at McPherson, Kansas, to prevent the spread of small-pox. It appears that mails from that office are being fumigated, and those refused are such as were offered by the public direct to the postal car, without going through the post office.

R. M. THOMAS, *Superintendent.*

"Left Herington, 3-12, 1888, 4:30 A. M.; arrived Pratt, 3-12, 1888, 10 P. M.—Refused to receive mail at car at McPherson, as small-pox is very bad there, and postmaster disinfects mail so that I don't think there is any danger coming through the office.

GEO. H. JONES, *R. P. Clerk.*"

The following is the special correspondence and reports of county health officers, municipal health officers, and Secretary of the State Board of Health. Also, reports of the occurrence, management and results of small-pox as it has occurred in Kansas and eight other States since our last session, which may be of interest to the Board at this time. The following letter was addressed respectively to W. A. Shelton, M. D., County Health Officer, McPherson; Max Miller, M. D., County Health Officer, Newton; R. W. McCandless, M. D., County Health Officer, Emporia:

TOPEKA, KAS., March 15, 1888.

DEAR DOCTOR: At your earliest convenience you will please write and send to me a special report, giving me as complete a history as possible of each case of small-pox or varioloid that was at first pronounced *chicken-pox*; stating the age of said persons, names, residence, where and how the disease was contracted, whether or not they were vaccinated, and if so, the time when vaccinated, and how often, whether successful or not, and the history and result of each case.

Yours truly,

J. W. REDDEN, *Secretary.*

The following responses to this letter were received:

WICHITA, KAS., April 1, 1888.

J. W. Redden, M. D.—DEAR DOCTOR: Excepting one case in the city, which came from McPherson, and which is most carefully and closely quarantined, the small-pox has been stamped out. The pest-house has been cleansed, fumigated, white-washed, and put in excellent condition. All the bed-clothing used by the small-pox patients has been burned; the premises have been put in good sanitary condition. All cases and the suspects have been discharged, and we are free once more.

The health of the city is otherwise good, except some few cases of reported scarlet fever.

Very truly,

J. MILTON WELCH.

PRATT, KANSAS, May 22, 1888.

J. W. Redden, M. D., Topeka, Kansas—DEAR DOCTOR: Dr. Hendrickson, of Sawyer, Pratt county, Kansas, has reported to me a case of varioloid—one Marion Hite, living $2\frac{1}{2}$ miles northeast of Sawyer. I have quarantined all persons possibly exposed, and do not fear its spread. I have just returned from the neighborhood, but did not examine the case. I have ordered all precautions to be taken.

Respectfully, J. M. ROGERS, M. D., *County Health Officer.*

LYONS, KANSAS, March 10, 1888.

J. W. Redden, M. D., Secretary State Board of Health, Topeka—DEAR SIR: In reply to yours of recent date, will say that there is one case of varioloid at Little River, Kansas. It is of about three weeks' standing. No new cases. The case is properly cared for by the local authorities, and I think there will be no spread of the disease from it. The towns in this county are quarantined against all towns having the disease, and all the precautions possible are being taken. Will inform you if any more cases are reported. Very truly,

N. F. TERRY, M. D., *County Health Officer.*

LYONS, KAS., March 21, 1888.

J. W. Redden, Secretary State Board of Health—DEAR SIR: Since writing you I have been told by Dr. Brigg that there are in all four cases of small-pox at Little River, but they are all convalescing, and are properly isolated. They occurred in persons who were inmates at the hotel where the first case appeared. We have probably two cases here in Lyons, developed yesterday. One case had a chill Thursday last, followed by fever and pain in limbs, headache, etc. Eruption appeared Sunday on face, arms, and trunk, and extended to lower extremities. Saw it once yesterday. Eruption becoming papulæ, fever moderate, constant perspiration on face. The case is in charge of a quack, but the house and inmates have been properly quarantined, on my suggestion, by the city council. The other is down in town, and shows a slight papulæ with mild prodromita for three days. House and inmates all quarantined. Will remove him in a day or two if symptoms develop. We have as a city used all possible means to prevent the disease. It probably originated from a prostitute coming here from an infected house in McPherson. She stayed with a hack-driver here who is an associate and fellow-boarder of the two affected.

Neither case has ever been vaccinated.

Will keep you informed. Would be pleased to hear suggestions from you.

Yours, N. F. TERRY.

LYONS, April 2, 1888.

J. W. Redden, M. D.—DEAR SIR: We have in all but three cases of small-pox, which began just before date of former letter, two weeks ago. They were all typical cases of discrete small-pox. I am at a loss what to say about two other cases confined with them. Both have good vaccination scars and were vaccinated twelve days ago: they were lodging with the other persons having varioloid. Last week they complained of a slight indisposition for two days and then had four or five papulæ form on face and one on wrist; the papulæ, two or three of them, became vesicular and then dried up completely. Would it be safe to call them varioloid? There was no umbilication. How can I find minute details for fumigating and disinfecting persons after recovery? So far am following suggestions of Form 58-A. They are not full enough. Any suggestions you may make will be thankfully received.

We are, I think, fortunate in controlling the spread of the disease, as no new cases have occurred.

One fact has attracted my attention which is new to me, viz.: Many children who are vaccinated with bovine virus have, about the tenth or twelfth day, a mocular

eruption appearing all over the body in about twelve to twenty-four hours, and occasioning papulæ on the wrist, but not hard to the touch. So far the eruption gradually dies away, not developing further than a mocular eruption—some constitutional disturbance. I isolated the first cases, but as there were no papulæ fully formed, no vesicles, etc., it excluded varioloid.

Please give me your opinion on anomalies in the eruption due to vaccination.

Yours,

N. F. TERRY.

SALINA, KANSAS, March 10, 1888.

J. W. Redden, M.D., Secretary State Board of Health—SIR: I have to report a second case of small-pox in this locality, the result of McPherson infection. Came from McPherson about one week ago. It is without the corporate limits, and was concealed by a set of persons professing to be "Christian Scientists"; the proper name for them is fanatical fools. The city government has quarantined the premises and the "Christian Scientist" physicians or doctors with them. I fear he has already exposed other parties. I verily believe that through negligence and stupidity this whole section will be infested with the pestilence. We have now two cases; premises quarantined.

Yours,

N. D. TOBEY, M.D.

McPHERSON, KANSAS, March 13, 1888.

Dr. J. W. Redden—DEAR SIR: Yours of the 12th received, and contents noted. Will send you report, as per request, this evening. Will say we have had two new cases, and no deaths for the past seven days. I assure you we have done all that money and hard work could do since the disease was pronounced small-pox, and we feel confident that the time is not far distant when we can say to our sister towns and counties that we have no more small-pox in our city.

Truly yours,

J. W. STABLER, Mayor.

McPHERSON, March 17, 1888.

Dr. J. W. Redden—DEAR SIR: Yours of the 14th to hand, and contents noted. I gave your letter of request for report to our County Health Officer, and he said he would send you a report. We are getting along nicely. Have had but one death since I wrote you—an aged negro. I will send you the McPherson *Freeman*; it will give you full details of our pest to date of publication, and Dr. Logan will send report from that date to the present. Am sorry Dr. Shelton did not send a report.

Truly yours,

J. W. STABLER, Mayor.

Full reports of the small-pox epidemic at McPherson were prepared by the County Health Officer, and also by the attending physician. Said reports will be found printed on subsequent pages of this volume.

NEWTON, KANSAS, May 9, 1888.

J. W. Redden, M.D., Secretary State Board of Health, Topeka, Kas.—DEAR DOCTOR: I think I am safe in attempting to make a final report of our small-pox epidemic. Number of cases, 25; number of deaths, 1.

The epidemic we have had differs from anything I have ever seen in the nature of small-pox, although I am well convinced in my mind that it was genuine small-pox. Its difference: *First*, the eruption seemed to appear after the vesicles were formed, a great many of them never forming pus; *second*, the eruption appearing very soon after the primary fever; *third*, the pitting or marking, after the desquamative stage, was more of a nodule than a depression. The vesicles that matured thoroughly were typical. Very respectfully,

MAX MILLER, M.D., County Health Officer.

NEWTON, KANSAS, March 18, 1888.

J. W. Redden, M. D., Topeka, Kas.—DEAR DOCTOR: In reply to yours of 17th inst., will say: I cannot make a report of the cases in the northwest part of the county, as they are still in progress. Was in hopes that I could soon make you a clean report, and tell you we had no further trouble; but on Saturday last it was reported to me that there was a family in the south part of town who were having a suspicious sickness. They were Germans, and being cared for by an old German lady here, who practices medicine, and of course knows nothing of disease. The consequence was, no one knew anything about it until the neighbors became suspicious, and asked that the matter be investigated. The contagion is supposed to have been carried from McPherson. The man's name is Hege; has a wife and seven children. He is editor of a German paper here, and a great many Germans and Mennonites from the north part of this county and the south part of McPherson visit his office; and, as you no doubt know, McPherson county has small-pox scattered all over it. Himself and five children are now sick. Some members of his family have been attending school, until last Friday. We have shut them up, and also all of his help in the office.

Will write you again in a day or two.

Respectfully,

MAX MILLER, *County Health Officer.*

NEWTON, KANSAS, May 18, 1888.

J. W. Redden, M. D., Secretary State Board of Health, Topeka—DEAR DOCTOR: You must excuse that report, as I had just returned from Kansas City, and that may explain all. The report of the Crow and Finch families I sent you some time ago. The next small-pox we have here is in a family by the name of Yowell. Origin, from Crow's family. 1. James Yowell, age 42; not vaccinated; discrete small-pox. 2. Mrs. Yowell, age 44; was vaccinated twenty years ago; varioloid (very light). 3. George Yowell (son), age 21; not vaccinated; discrete small-pox. 4. Lee Yowell, age 18; vaccinated five years ago, one scar, good; had varioloid. 5. Jessie Yowell, age 13; vaccinated five years ago, one good scar (human virus); had varioloid. 6. Mattie Yowell, age 10; vaccinated five years ago, one good scar; had varioloid. 7. Anna Yowell, age 7 years; was vaccinated at the time of first outbreak in family, took well and she had no trouble, no fever.

Next we have, two miles east of this, (and by the way, this family lives 15 miles northwest of Newton,) three young men "keeping bach." 1. John Robbins, age 34; vaccinated ten years ago, one scar; had varioloid. 2. Walter E. Ball, age 23; not vaccinated; had confluent small-pox. 3. Andy Hall, age 22, not vaccinated; had discrete small-pox. These young men helped to nurse some people in Reno county that contracted small-pox from the Crow family; contagion then indirectly from the Crows.

Next we find a family in the city with varioloid and small-pox in all stages; some almost over it, others pretty sick, and some just coming down. In this family we have U. Hege, age 45; vaccinated forty years ago; one fine scar; had varioloid very light. 2. We have Lizzie Hege, age 11; vaccinated five years ago; one good scar; had discrete small-pox. 3. Ulrich Hege, age 8; vaccinated five years ago; one good scar; had discrete small-pox. 4. Anna Hege, age 9; vaccinated five years ago; had one good scar; had discrete small-pox. 5. William Hege, age 7; was vaccinated at the time of the outbreak in the family; did not take, and he was not sick. 6. Eddie Hege, age 5; not vaccinated; had confluent small-pox. 7. Robbin Hege, age 3; not vaccinated; had discrete small-pox. 8. Hamlin Hege, age 9 months; not vaccinated; had confluent small-pox. The origin of contagion in this family is not positively known, but was, I think, from McPherson; as soon as reported to me I established

a quarantine. But from that family, we had three cases in the family of J. W. McPeck. In that family we had: 1. John McPeck, age 7; vaccinated six years ago; had discrete small-pox. 2. Eddie McPeck, age 4; not vaccinated until after the outbreak in family; did not take; had confluent small-pox; died the fourteenth day. 3. Jennie McPeck, age 2 years; vaccinated about a month before it broke out in family, took; one good scar; had discrete small-pox. The mother took sick when she was about seven months pregnant. She was isolated as much as she could be, and stayed in same house; had no spread from that family. The doctor that took care of this family contracted the disease while attending them—Dr. Charles Hamilton—age 33; was vaccinated in childhood; has one good scar; revaccinated in February and March, this year; did not take. His wife was confined during the time that he was sick, during primary fever; he delivered her himself, and the mother and baby were all right. He had two children, aged about 2 and 4 years; neither of them took it. They had both been vaccinated in February, 1888. As I have remarked to you before, these doctors are unruly, and Dr. Hamilton would not stay at home until he was pretty near covered with scabs. He knew that he was all right, and that he was not going to have any trouble; and from that, we had a case of discrete small-pox. Have them on hand now; and of them I will speak later.

Very respectfully, MAX MILLER, M.D., *County Health Officer.*

EMPORIA, March 19, 1888.

J. W. Redden, M.D., Secretary State Board of Health—DEAR DOCTOR: I have been very busy to-day with another case of small-pox, four miles east of Emporia, a colored man named Bailey. Dr. Biddle was attending him; as the disease developed it was by him pronounced small-pox. He informed me of the case, refusing to go to see him again. I could not go to see the case to-day, but succeeded in getting Dr. Page to go and see him. I gave him vaccine virus (points) to vaccinate the family of the sick man, and gave him posters (small-pox) to put up to warn the public, if he found small-pox. There will be a meeting of the Board of Health on Wednesday morning, as that will be as soon as the Commissioners can be convened. I will report their action later. This case is a mysterious one; the man has no knowledge of having come in contact with the disease. He was not vaccinated. The county board will do all in their power to prevent the spread of the disease.

Respectfully yours, R. W. McCANDLESS, M.D., *County Health Officer.*

ATCHISON, KANSAS, May 20, 1888.

J. W. Redden, M.D.—DEAR DOCTOR: What do you know about the small-pox at Leavenworth? The physicians of that "little republic" ordered by telephone all the virus we had, yesterday; and I am informed they have seventeen well-developed cases among the colored population of that "republic." The first case, I am informed, came from St. Louis.

While it is true they have stubbornly refused to conform to the wholesome rules and regulations of the State Board of Health, when the health of their people would have been improved, and life made more secure by doing so, yet write them and supply them with our circular on small-pox, its prevention, etc., and offer them the assistance of the State Board, and the presence, if they so desire, of the Executive Committee of the Board, to advise with them about the best measures to adopt to stamp out this loathsome disease. Two days after I wrote you last, the public schools of Atchison were closed until next fall. The school board had been slow to adopt my advice to close the South Atchison schools, on the outbreak of diphtheria, as only three weeks more of the school year remained, and they hoped to be able to finish the year. All the fatal cases, fifteen in number, with the exception of two, were in the immediate neighborhood of these schools. There was not a time from

the first outbreak of the disease, when there was not one or more cases within a block of the school building, and every day for a week or more, there was a dead child within this distance. Finally a case developed in a child of the janitor of the school building, who lived in the basement. The school board could not hold out any longer; and by this time the disease had appeared in North Atchison, so it was necessary to close all the schools. How many lives might have been saved by the prompt closing of the schools on the first outbreak of the disease, can never be known with certainty; but it is reasonable to suppose that some of these innocent children might have been well to-day, had the schools been closed on the first outbreak of the disease. The disease has about disappeared, only two new cases having been reported this week. Yours,

G. H. T. JOHNSON, M.D.

TOPEKA, KANSAS, May 19, 1888.

Dr. Nealy, Mayor of Leavenworth—DEAR DOCTOR: I have received reliable information, indirectly, of the existence of several cases of small-pox in your city. I take great pleasure in sending you for distribution among those whom you may think proper, twenty-five pamphlets issued by the State Board of Health on "Small-Pox: its Prevention and Restriction," hoping the suggestions contained therein may be of material benefit to those who may use them. If the disease has a foothold in your city, its publication in all of your papers would be both desirable and profitable to all the citizens who might read them.

The State Board of Health will gladly render any aid to your authorities that may be desired; and the President or Secretary, or any member of the Executive Committee, will hold themselves in readiness at any time to make a personal visit and hold a conference with your city authorities, with a view of counseling and advising with them as to the best methods of preventing and stamping out this loathsome disease. Will be pleased to hear from you upon this subject.

Hoping these suggestions may be received in the same kind spirit in which they are volunteered, I remain

Ever yours truly,

J. W. REDDEN, M.D., *Secretary*.

LEAVENWORTH, KANSAS, May 21, 1888.

J. W. Redden, M.D.—DEAR DOCTOR: Dr. Walter showed me your letter, and has replied to it, I believe, informing you that there are in all sixteen cases of variola here, all isolated, and their families under observation. I also received your small-pox pamphlet, and would like some for distribution—say fifty. You may or may not have heard of a paper read at the last meeting of the E. K. D. M. S., in Topeka, last month, at which time I suggested this plan, not being aware of the existence of such pamphlets in this State; but Dr. Jones told me you had already prepared them.

I have been appointed by the Council to take charge of the pest-house, and at present everything seems to be going on well. I expect, however, that many who have been exposed will be taken down this week, and if it proves too much for us we will gladly accept your offer. Dr. Walter and myself, while not sending for you now, would be glad to see you if you happened to be this way. The older members of the Board think we are well enough off as we are. We will keep you advised, and send if necessary. No secret is made of the existence of the disease in town, and houses are flagged; but naturally we wish to avoid newspaper notoriety, and ask that the press be not informed.

Very respectfully yours,

W. D. BIDWELL, M.D.

TOPEKA, KANSAS, May 22, 1888.

W. D. Bidwell, M.D., Secretary Leavenworth City Board of Health—DEAR DOCTOR: Your letter of 21st received. Am pleased to receive a full statement of the small-

pox epidemic in your city, and also to note the prompt and precautionary measures that you are taking to stamp out the disease. As requested, I send you by mail to-day a package containing fifty small-pox pamphlets. Acknowledge receipt. Keep me posted as to the progress of the disease; and when it is entirely stamped out, prepare a complete and thorough report of the origin, history, progress, management and result of the epidemic, giving the number of cases of each variety, the duration, the ages, number vaccinated, how often vaccinated, when last vaccinated, the number of scars, number of fatal cases, and any other points of interest pertaining to any case of the disease, and send to my address that I may engross it for publication in the next Annual Report of the State Board of Health. Will be pleased to hear from you at any time. Very truly yours, J. W. REDDEN, *Secretary.*

LEAVENWORTH, KANSAS, May 21, 1888.

Dr. J. W. Redden, Secretary Kansas State Board of Health, Topeka, Kas.—DEAR DOCTOR: Your letter and pamphlets were received yesterday, and we thank you for your kind offer, but we hope within a short time to be free from the pest. A man came here about three weeks ago from St. Louis with what one of our quacks called chicken-pox. He was carefully housed by his family, who, I think, knew more than the doctor.(?) In due time the other members of the family, who had been out as servants, came down, and thus the disease began and was spread in our midst, all due to an ignorant quack.

We have made the disease public at home, but do not care to put the matter in our papers; have burned the house and contents in which the disease started; have removed all sick with the disease and their families to the pest-house; have fumigated the houses near where the patients were, and have vaccinated nearly every individual in the city. We would be glad to have you or any other member of the State Board visit us at any time. Thanking you again for your most kind letter and offer of assistance, I am,

Yours truly,

W. W. WALTER, M. D., *of City Board of Health.*

LEAVENWORTH, KANSAS, May 31, 1888.

J. W. Redden, M. D.—DEAR DOCTOR: Yours of 29th inst. is at hand. Up to date, twenty-nine cases have been reported; of these, nineteen are colored and ten white. Four cases, now convalescent, are three miles west of town: sixteen are at the pest-house, under my care, as are also two cases in town; the remaining seven are under the care of three other physicians. None of my cases are dangerous at present. Dr. Brock reports that the young lady in his charge is liable to die, but all the others are doing nicely.

Doctor, in the annual report you are rather hard on Leavenworth; the Board of Health has accomplished a deal of good already, and has more in view. We have many physicians here ready to comply with the laws in reporting births, marriages, and deaths, (all of which occur here, although not mentioned in the report,) and to help on sanitary reforms; but there is no county health officer to receive such reports, and the power lies not with us to appoint such an one or enforce an appointment. Were this one detail provided for, I think all would soon fall into line.

Respectfully yours,

W. D. BIDWELL, M. D.

FACTS IN THE CASE.—THE BOARD OF HEALTH ISSUES AN OFFICIAL ANNOUNCEMENT.

False and exaggerated reports having been circulated regarding the existence of small-pox in this city, the Board of Health issues this official notice.

Five weeks ago a colored man came to this city from St. Louis, with the eruption of small-pox partially broken out on him. This was not reported to the Board of Health until May 14th, and as no attempt had been made to quarantine the family,

quite a number of people had been exposed up to that time. Of this number, nineteen have taken the disease, making a total of twenty cases reported to date.

All except four have been removed from the city, and all of the cases and all persons known to have been exposed are at present isolated, and under observation of the board.

The disease is in a mild form; there have been no deaths, and several cases are already convalescent.

These being the facts of the case, we consider the disease thoroughly under control.

(Signed)

WALTER D. BIDWELL, M. D., *Secretary.*

LEAVENWORTH, KAS., June 3, 1888.

J. W. Redden, M. D.—DEAR DOCTOR: There have been to date thirty-five cases. Of those since last letter all were negroes, and in the same families as the other cases; no new places being affected. No deaths, and all are doing nicely. Some interesting details I will give when the complete report is sent.

Respectfully yours,

W. D. BIDWELL, M. D.,

Secretary City Board of Health.

LEAVENWORTH, KAS., June 10, 1888.

J. W. Redden, M. D.—DEAR DOCTOR: We hang fire at thirty-eight cases to date, more than half of whom are practically well. We have had no deaths, but one colored girl, whose left lung is diseased, has just broken out with small-pox, and I fear for her. There are about eight who are quite sick; the balance are nearly through, or just beginning to scale off. Two cases were reported from Tonganoxie, and a request was made for their admission to our pest-house yesterday, but I have not seen them yet, and they do not belong to Leavenworth.

Do you think our county can ever be *compelled* to have a health officer? I wish the State Board had the power to do something in the matter.

Respectfully yours,

W. D. BIDWELL, M. D.

The Provincial Board of Health of Montreal reports under date of May 15th: "A case of small-pox at Quebec city; patient had been visited by a brother from the United States. Patient isolated, others exposed quarantined."

Minnesota State Board of Health reports, April 26th and May 10th: "Case of small-pox at St. Paul; child, twelve years old; patient and family isolated, and all neighbors vaccinated. Case of varioloid at Cambridge; a son had varioloid in Kansas, three weeks thereafter returned to home in Iowa; six weeks thereafter mother came to Cambridge, and in two weeks disease appeared. Isolation and vaccination."

Connecticut State Board of Health reports, under date of April 16th and 20th, and May 4th: "Case of small-pox at New Haven, a Mrs. Davis; unvaccinated; origin, a case of varioloid in an engineer on N. Y. & N. H. R. R., called measles by an ignorant doctor. Two cases of small-pox, one in New Haven and one at Bridgeport; a child in New Haven and a married woman at Bridgeport; origin in the child, from the case last reported, the mother since died; in the woman, contracted in New York city; all precautions taken to prevent its spread. One case at Thompsonville, a child, origin unknown."

Tennessee State Board of Health reports, May 22d and June 12th: "Two

cases of small-pox at Memphis, both colored, origin not stated." "Six new cases, last date, all colored, living in vicinity of those reported May 22d, both of which died. Vaccination, disinfection and isolation, etc."

Maine State Board of Health reports, May 20th: "Three cases of small-pox in Cumberlandville; origin thought to be from rags (English white) in the rag-room of the paper mills."

North Carolina State Board of Health reports, March 29th: "A case of small-pox in Goldsborough, a foreigner recently arrived from New York city."

Wisconsin State Board of Health reports, April 19th: "A case of small-pox at Racine; origin unknown, supposed to have been imported by a recently arrived emigrant from Denmark." Also, June 18th: "A case of small-pox in Lake Mills, Jefferson county; origin unknown. Patient had been away from home for some time prior to the appearance of the disease; case under the control of local health officer."

Illinois State Board of Health reports, under date of April 4th and 19th, May 28th, June 7th, 11th and 21st, as follows: "A case of varioloid has been reported in Bond county, four miles north of Grantville; patient came from St. Louis. A case of varioloid at Reno, Bond county; disease contracted in Colorado. Three cases of small-pox at Metropolis; also, Dr. James E. Gowan, chairman of the Board of Health, is suffering with the disease, this being his second attack. Three cases of small-pox at East St. Louis; disease originated in St. Louis among the negroes; prompt measures taken to prevent the spread. One case of small-pox at Kaskaskia, landed there by steamer from St. Louis. Two new cases at East St. Louis, one in the city and one four miles out in the country, recent arrivals from St. Louis, all colored. Another case of small-pox at East St. Louis; the case is a negro child; in fact, all the cases that have occurred there are negroes. Andrew Laird, the negro left by the Anchor line steamboat City of Providence below Kaskaskia, died June 7th; he contracted the disease in St. Louis. This is the only death by small-pox that has occurred in this State for over two years."

The Pennsylvania State Board of Health reports cases of small-pox in that State as follows:

"MARCH 21.—A case of small-pox exists at Philadelphia; he is an immigrant. The origin of the disease is importation on the steamer 'Athdell,' from Cienfuegos. Patient has been isolated and even vaccinated. A death from this disease took place in Philadelphia last week.

"APRIL 12.—Six cases of small-pox exist at Philadelphia, one an immigrant, the other five residents. The origin of the disease is from England, by way of New York and Philadelphia. The following precautions have been taken: Isolation in a municipal hospital, disinfection of premises, and observation.

"APRIL 18.—Forty-six cases of small-pox exist at Philadelphia, which have developed since my last notice; all of these are residents. The origin of the disease is from cases previously reported. Of these, nine are varioloid and thirty-seven va-

riola. They are isolated in a municipal hospital, or at home, placarded and quarantined locally.

"APRIL 20.—Twenty cases of small-pox exist at Philadelphia in addition to those last reported; all are residents. The origin is by contagion from previous cases. Five deaths have occurred. Precautions by isolation, disinfection, vaccination of public-school children, and local quarantine.

"APRIL 27.—Twenty-three cases of small-pox exist at Philadelphia, which have developed since last notification; all are residents. The origin is contagion from cases previously reported. Up to the present time twelve deaths have occurred. Precautions by isolation, placarding, local quarantine, and general vaccination.

"MAY 2.—Twelve new cases of small-pox at Philadelphia, eight deaths having taken place during the past week; also two cases at Bentleysville, Washington county, one of which was fatal. Disease brought from New York to Philadelphia.

"MAY 10.—Sixty-nine cases of small-pox have occurred in Philadelphia since notification of April 20; all are residents. Origin as previously reported. During the same period nineteen deaths have taken place. Isolation and disinfection are observed.

"MAY 23.—Fourteen cases of small-pox have developed at Philadelphia since last notification. During same period, six deaths have occurred.

"MAY 31.—Seventeen cases of small-pox have developed in Philadelphia since May 22; three deaths have been reported during the same period. There are now sixty cases in the municipal hospital.

"JUNE 7.—Nine cases of small-pox have developed since May 29. During the same period, three deaths have been reported.

"JUNE 14.—Twenty-one cases of small-pox have developed in Philadelphia since June 5. During the same period, three deaths have been reported."

The following are reports of analyses made by Dr. Alexander, the chemist, of samples of water sent from Ellsworth, where they had put in water works:

TOPEKA, KANSAS, April 24, 1888.

Dr. J. W. Redden, *Secretary State Board of Health*—DEAR DOCTOR: Inclosed please find report on waters referred to me for analysis.

NO. 1, ELLSWORTH, KANSAS.—One gallon of water taken from hydrant at a "dead-end," over a mile from city pump, and one-half mile from water power. City pump 150 feet from Smoky Hill river.

Color.....	Yellow.
Odor.....	Faintly of H ₂ S gas.
Lead.....	None.
Nitrates.....	Faint trace.
Organic matter.....	.125 grs. per gal.
Chlorine (combined).....	6.089 " " "
Sulphuric anhydride (combined).....	15.278 " " "

	ANALYSIS.	Grains per U. S. gallon.
Organic matter.....		.125
Silica.....		.580
Alumina.....		.290
Bicarbonate of iron.....		3.480
Bicarbonate of lime.....		22.620
Bicarbonate of magnesia.....		8.120
Sulphate of sodium.....		9.369
Chloride of sodium.....		10.088
Bicarbonate of soda and potash.....		9.128

Total solids..... 63.800
Trace of hydrogen sulphide gas.

	<i>Parts per million.</i>
Free ammonia.....	.7182
Albuminoid ammonia.....	.1524

NO. 2. ELLSWORTH, KANSAS.—One-half gallon of water taken from city pump, 150 feet from Smoky Hill river.

Color.....	Yellow.
Odor.....	Good.
Lead.....	None.
Nitrates.....	Very faint trace.
Organic matter.....	.123 grs. per gal.
Chlorine (combined).....	6.089 " " "
Sulphuric anhydride (combined).....	5.278 " " "

	<i>Grains per U. S. gallon.</i>
ANALYSIS.	
Organic matter.....	.116
Silica.....	.572
Alumina.....	.243
Bicarbonate of iron.....	3.032
Bicarbonate of lime.....	21.631
Bicarbonate of magnesia.....	8.109
Sulphate of sodium.....	9.369
Chloride of sodium.....	10.088
Bicarbonates of soda and potash.....	8.700
Total solids.....	61.860

	<i>Parts per million.</i>
Free ammonia.....	.9946
Albuminoid ammonia.....	.1372

MICROSCOPIC EXAMINATION.

No. 1. { Infusoria.
Algae (fresh water).
Particles of inorganic matter.

No. 2. { Infusoria.
Algae (fresh-water.)

These are both unhealthy waters for drinking purposes, owing to the excessive amount of albuminoid ammonia found to be present. No. 1, from the "dead-end," is worse than No. 2, for two reasons, viz.: the increased amount of albuminoid ammonia, and the presence of a very small quantity of hydrogen sulphide gas—both of which are the indirect results of oxidation. Sulphide of iron is first formed from the decomposition of organic matter and iron, and this is broken up by oxidation into hydrate of iron and hydrogen sulphide gas. Both samples are unfit for drinking purposes.

REID ALEXANDER, M. D.,

Chemist and Microscopist for State Board of Health.

The following is a communication from the County Clerk of Jackson county, and the answer:

HOLTON, KANSAS, March 10, 1888.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR SIR: It is reported that there is a case of small-pox two and one-half miles east of this city, the person contracting the disease in Cowley county. Please inform me if I have any duty in the matter. We have no health officer. Yours truly,

ED. E. BIRKETT, *County Clerk.*

TOPEKA, KANSAS, March 12, 1888.

Ed. E. Birkett, Esq., *County Clerk, Holton, Jackson County*—DEAR SIR: Yours of the 10th, informing me of a case of small-pox near your city, received. This circumstance is one of many, showing the importance, and even necessity, of having a competent physician as county health officer, willing and prepared to take prompt

action in all such emergencies, and to control or prevent all such loathsome and contagious diseases. A few hundred dollars paid to such an expert, annually, will save the county thousands of dollars, and prevent much suffering and many deaths. Call the attention of your county commissioners at once to this case, and urge upon them the importance of appointing a competent physician as county health officer, and write the result of their action. In the meantime, it is the duty of either the county or city authorities to employ a competent physician to attend to this case, and use all precautionary measures by way of vaccination, disinfection, isolation, and quarantine, to confine the disease to the one family, and prevent its further extension to anyone else. Let me hear from you in reference to the action of the county board or city authorities.

Yours truly,

J. W. REDDEN, *Secretary*.

The following are special reports from the County Health Officers of Marion, Pawnee and Phillips counties, of the outbreak of diseases dangerous to the public health:

PEABODY, KANSAS, March 26, 1888.

Secretary State Board of Health: There has come to my knowledge a case of small-pox in Peabody township, Marion county. The person sick is Mr. Frazier, about 25 years old; he was taken sick with this disease on the 23d day of March. This is the first case. I have ordered complete and thorough quarantine, and ordered all persons to keep away. The house is one-fourth of a mile away from any other. I have also, during the past eight weeks, urged vaccination of all persons whether previously vaccinated or not.

C. A. LOOSE, M.D., *County Health Officer*.

LARNED, PAWNEE COUNTY, March 25, 1888.

There have come to my knowledge two cases of small-pox in Garfield township, Pawnee county. Persons sick are Mr. and Miss Woods, about sixty and twenty years old; taken sick the 20th day of March, 1888. Only these two cases have occurred in this county. The danger of spreading the disease is not great, for the reason that vaccination and early quarantine are being enforced.

J. M. CUMMINGS, M.D., *County Health Officer*.

PHILLIPS COUNTY, March 20, 1888.

There has come to my knowledge a case of measles in the city of Phillipsburg, Phillips county. The person sick is William Morton, about nineteen years old, taken sick the 8th day of March, 1888. The danger of spreading the disease is not great, for the reason that strict quarantine has been maintained.

ISAIAH MILEY, M.D., *County Health Officer*.

The following are brief synopses of the quarterly reports of county health officers received during the present quarter:

From Cheyenne county there are reported 15 cases of measles, and 2 deaths; 2 cases of cerebro-spinal meningitis, and 1 death; 2 cases of diphtheria; 1 case and 1 death from consumption; 5 cases of acute lung diseases; and 2 deaths under 5 years of age. There were also reported 10 births, 2 still-births, and 2 marriages.

From Elk County: One case of scarlet fever. Pneumonia has been quite prevalent in said county. The County Health Officer writes: "We have had a great deal of sickness, of rather a peculiar character, the last quarter, which has been fatal in many cases. It commences with neuralgic

pains in head, face, back of neck, and reaches to the pleura on one or both sides, shifting from place to place, with slight fever; most of said cases get well, while others take on symptoms of pneumonia, with considerable mortality." General sanitary condition of the county is good.

Crawford county reports as follows: Three deaths from measles, 5 from scarlet fever, 1 from cerebro-spinal meningitis, 2 from whooping-cough, 7 from typhoid fever, 2 from puerperal fever, and 8 from consumption; also 3 still-births and 144 births were reported.

From Finney county, as follows: One death from diphtheria, 2 from typhoid fever, 1 from diarrhoeal diseases, and 2 from consumption; also reports 2 still-births, 6 births, and 15 marriages.

From Linn county, as follows: Fifty cases of measles, 80 of whooping-cough, and 10 of diphtheria; and the County Health Officer writes: "We have had a disease through the county generally called scarlet rash. The rash is like scarlet fever, but no sore throat; generally not high fever. The rash disappears in two or three days. Many of the patients are not confined to their beds. No fatal cases reported."

Lincoln county reports: Two cases of cerebro-spinal meningitis, 5 of diphtheria, 1 of whooping-cough, 10 of erysipelas, 2 of typhoid fever, 5 of puerperal fever, 3 of diarrhoeal diseases, 6 of consumption, 11 of acute lung diseases, and 3 of acute rheumatism; 1 death from puerperal fever, and 1 from consumption. Six births also reported.

Marion county reports: Measles, chicken-pox, and a few cases of scarlet fever prevail in Peabody and the surrounding country. No fatal cases have been reported. A mild case of scarlet fever was reported March 30, and the county health officer ordered the ordinary precautions by quarantine, etc.

Miami county reports: Three cases of scarlet fever and 2 of typhoid fever, and reports general sanitary condition of county good, with little sickness.

Pawnee county reports: Eleven cases of small-pox, 10 of diphtheria, and 3 of acute lung diseases; also, 1 death from diphtheria, and 1 from acute lung disease.

Rooks county reports: Six deaths, 9 births, and 36 marriages.

Russell county reports: The health of this county has been good for the past three months; no contagious diseases. A man who resides in the northern part of the county came home after having been exposed to small-pox, but proper means of disinfection were observed, and the disease was not disseminated.

Thomas county reports: One death from rheumatism, 1 from scarlet fever, 1 from cerebro-spinal meningitis, and 1 from diphtheria; also reports 9 births and 4 marriages. Measles very prevalent, but no deaths reported from it.

Wallace county reports: We are making a strong effort to improve the

sanitary condition of this county, and have thus far succeeded well. The County Commissioners took hold of the matter, and are doing all that could be expected in a new county. We have four or five quacks practicing medicine in this county who make no reports, therefore our statistics are incomplete. There have been several births and deaths in the county, of which there have been no reports made. We expect the Supreme Court will soon pass upon the question of our county organization. I am in favor of then enforcing the law; as it now stands, we seem to be powerless.

The following special communications are worthy of record and consideration. First, from Labette county:

OSWEGO, KANSAS, May 22, 1888.

J. W. Redden, M. D., Secretary Kansas State Board of Health, Topeka, Kansas—
 DEAR SIR: On Saturday, May 19th, one case of scarlet fever in Oswego was reported to me. I at once caused a scarlet-fever notice to be posted on a conspicuous part of the house, and advised complete isolation of the patient. Yesterday, May 21st, at 11 o'clock A. M., the patient died, and was buried at 5 o'clock P. M. of the same day without unnecessary publicity. The room in which the patient lay sick was fumigated with burning sulphur, and all clothing, bedding, carpet, etc., was directed to be thoroughly boiled. It was also advised that the other children of the family be kept from school and at home until all danger of contagion was past.

This is the second case of scarlet fever reported in this county during the last year, and the first death occurring from that cause in that time. The first case occurred about two months ago, and was imported from Neodesha, Kansas. The origin of this case cannot or has not been traced.

Any assistance, advice or direction you may give to better enable me to control the spread of this disease, will be thankfully received and promptly complied with.

I am very respectfully,

E. E. LIGGETT, M. D., *County Health Officer.*

OSWEGO, KANSAS, March 27, 1888.

J. W. Redden, M. D., Secretary Kansas State Board of Health, Topeka, Kansas—
 DEAR SIR: German measles, chicken-pox and mumps may be said to have been epidemic with us during the last four or five months, but owing to the trifling character of these ailments, I have not deemed it necessary to report their occurrence to you. No very active steps have been taken to control the spread of these disorders. During the last ten days, scarlatina has been imported to us from Neodesha, Kansas: and owing to a lack of authority to enforce a proper quarantine, it has begun to spread. Two new cases were reported yesterday, and there is rumor of two other cases in the family of the physician who attended the first case, but he has made no report of it. Three cases of measles, complicated with diphtheria, were also reported yesterday. These occurred in the practice of a physician who is prone to exalt a very slight into a very grave disorder, either through ignorance or for the *eclat* which remarkable cases give him. Therefore I am at a loss to know how much credence should be given to his report. Nevertheless, I have caused to be posted on the residences of his patients a notice of "diphtheria and measles."

Under these circumstances, if you think it desirable to have a member of the State Board visit us, I shall take great pleasure in looking over these cases with him, and would be very glad of any assistance he may be able to give in enforcing a quarantine. I will leave it entirely with you to decide whether or not anyone shall come, and if so the choice of the member sent. I am, very respectfully,

E. E. LIGGETT, *County Health Officer.*

The following from Ottawa county:

MINNEAPOLIS, KANSAS, March 9, 1888.

J. W. Redden, M.D., Secretary State Board of Health—DEAR SIR: There have as yet been in this county no cases of variolous nature.

I have brought your kind notice before our city board of health, and will also place it before the county board of health. I published your first notice, with recommendations that all unvaccinated children should be stopped from school privileges until vaccinated. I have also recommended that our city quarantine against the infected district.

We have quite an epidemic of roseola; many children affected; some very badly, it being complicated with severe catarrhal trouble and tonsilitis. One fatal case. Some of our practitioners call it scarlatina. We have had one case of scarlet fever (child, aged two years) in a visiting family. This I treated. Quarantined and gave full directions for disinfecting and prophylactic measures. Mother of child was very slightly affected, and child convalescent. No cases from this as yet.

JAMES MCHENRY, M. D., *County Health Officer*.

And the following from Phillips county:

MARVIN, KANSAS, April 2, 1888.

Dr. J. W. Redden, Topeka, Kas.—DEAR SIR: I learned a few days since that there were a few cases of scarlet fever and a few cases of diphtheria in Kirwin. On the next day I made a visit to Kirwin, and found one case of diphtheria. Was informed that another family in town had scarlet fever, and one of the victims was buried that day; but the rash had left the other patients, and that they were much improved.

Dr. C. S. Knight informed me that he had been appointed local health officer, had closed the schools, etc. I learned too that disinfectants were being largely used in town; and as Dr. Knight's circumstances at the time I met him were such that he was not at liberty to go with me, I did not visit the family in which scarlet fever was said to exist; yet I am under the impression that it was the rash of rütheln, which is now epidemic with us to a small extent, and that diphtheria was the real cause of the fatality referred to above. I was informed yesterday that there were two more cases of scarlet fever in a family named Kinkade; the other family is named Thompson. The case of diphtheria which I saw was in the family of a Mr. Jones. Have sent Dr. Knight some blanks upon which to report to you.

Respectfully, ISAIAH MILEY, M. D., *County Health Officer*.

The following communication from a physician in Crawford county, and the answer thereto, may be of interest:

CRAWFORD COUNTY, KANSAS, April 20, 1888.

J. W. Redden, Secretary State Board Health, Topeka, Kansas—DEAR SIR: More than two years since, I wrote you requesting an examination before the Board; and stating also my term of practice. I rec'd in reply the inclosed letter, the terms of which I complied with in every particular. However last fall I was surprised to learn from the sheriff of this county that the Grand Jury desired my presence at the following term of Circuit Court to answer the charge of "illegal practice of medicine." The court ruled, that while I was acting under the guidance of the State Brd. that in the absence of a Diplema, I should be able to produce a *Certificate* from said Board. Now Doctor, I don't wish to "bore" or afflict you, but I have spent twelve years in the practice of medicine, have been at this place five years and over. Came here to stay, and wish to continue in practice, and if I deserve it would like to be protected against unprincipled and unscrupulous individuals who seek to

destroy me. As thus far my experience has been both unpleasant and expensive in that line. As to qualifications and professed standing can give satisfactory references. And I come asking that if in your power, you will issue me such *Certificate* and end further controversy.

Yours Respectfully, ————

TOPEKA, KANSAS, March 8, 1886.

———, M. D.—DEAR SIR: Your letter received. Our State Board of Health is not an examining Board. Inclosed find circular containing medical-practice act of this State. If you have been engaged in the practice of medicine for ten years, you have complied with the requirements of said law, and should register and receive all blanks necessary.

Yours truly, J. W. REDDEN, *Secretary*.

The following communications are not only amusing, but are striking and convincing arguments of the necessity and importance of a rigid medical-practice act in Kansas. Read them, and form your own conclusions:

———, KANSAS, March 15, 1888.

Dr. J. W. Redden, *Secretary State Board of Health, Topeka, Kansas*—DEAR DOCTOR: I inclose an application for blanks, which will explain itself. Dr. ———, who makes the application, has been arrested and taken to Pennsylvania for having produced an abortion.

Respectfully, ———, *County Health Officer*.

———, KANSAS, Feb. 188.

to Bord of heath you Please send me a Blank for Birth as i have None on hands and Cant mak Noe Moe Returns till I git Some.

———, KANS. April 19—1888.

To the Secretary of State—Board of Health, Topeka, Ka—DEAR SIR: Having recievt your circular about deaths, x x, but no Formulars. Who having them? from whom can I having it? The time as I was in the State of Mo. every county-clerk have them and give it to the Dr: by the time of Registering. I having asket the clerk, but he says he dont know nothing. Please let me know.

I am sir yours x x ———, M. D.

P. S. Here is a great many of old womens figuring as midwifs, wich will never report. How enforce the law, and send the Sherif behind them.

———, Kas., March 13, 1888.

GENTLEMAN: having resided a citizen here for some time and formily of Pt. Maine and want some information. I have had a good education, and the past 12 years I have used Medicines for common complaint & compound a medicine from herbs alone for the cure of any kind of a sore with the assistance of Sulp. Cocaine & acetic acid to remove the emflemation & dead flesh afterwards apply my herb remedy which is made from Bear foot Weed Milk Pusley and a little salt and ol of mustard external use and for blood I procures from a Druggist such as cinchona cardamon. Sarcapharella Quinine, yellow dock and many others prepared by the Druggist, but I find that it is not lawful to practice without a sheep skin so I concluded to mention to you just what I know & be straight with the law I want to get a certificate to practice certain diseases any place and use my preparation such as blood sores, Gonorreahé Rhumatism chills and complaints of the joints, as I have made that a specially before coming where diploms was required. Can give testimonials of the worse sore and Reference of Mr. ———, my aim is to go into the nation If I can procure a certificate to that effect, as I don't care to violate the law as so many wants me to sell them the medicen and I can't make it & afford to give too much away and I can't treat a case for nothing theirefor I apply for information hoping that you may give this some attention in regards to the law and matter I am not a gradu-

ate from a medical college and can I make this and sell and cure & charge The medicine is called Josephs Sampson of the Matera Medica Rhumatism pain cure.

Respt. _____.

March 15, 1888, ——— P. O.

Department of The state board of health of Kansas. Gentlemen please give me the address of a doctor or firm that understands and cures lost manhood caused by self abuse I have been dosed swindled and cheated by quacks & frauds, men that knew nothing about this disease & I felt that by Writing the state board, I would find some one that understood this disease. please let me hear from you soon, Hoping to be successful I remain truly, your servant

(A Homesteader.)

———— Co. Kansas.

The official and miscellaneous communications and the clerical labor of this office are increasing in regular and rapid ratio, for the people generally, in all sections of the State, are waking up to the importance and necessity of sanitary knowledge and demanding information upon the various branches of this advancing and useful science of sanitation.

The following communication, just received from our worthy President, is of special interest, and should receive definite action at this meeting upon the important suggestions presented for the consideration of the Board:

ATCHISON, KANSAS, June 13, 1888.

J. W. Redden, M. D.—DEAR DOCTOR: It now seems probable that I shall not be able to attend the annual meeting of the State Board of Health on Thursday, 14th inst., as we are afflicted with another outbreak of diphtheria, which began about ten days ago, and some of my patients have not consented to my leaving them for one day. Relative to this outbreak of this disease, the source of the milk supply of our city has attracted my attention. Perhaps the majority of our people obtain their milk from the Atchison Milk Company. This milk is kept in a room of the Windsor Hotel, on the banks of White Clay creek, which a great part of the time is no better than an open sewer, carrying off the waste and filth from a large part of the city. The privy of the hotel is located near the milk-room. Two cases of diphtheria have developed in this hotel within the past month; one, which was called quinsy, resulted fatally. I have condemned the location of this milk depot because of the unsanitary surroundings. The proprietor called to his aid the reporter of an evening paper. This expert sanitarian gave him a certificate of cleanliness and pronounced his milk good and pure. If the members of the State Board of Health think this a suitable case for their action, would be pleased to see any of them here to take action with me in this matter.

Please convey to each member of the Board my sincere thanks and gratitude for their uniform kindness to me during the past three years.

Fraternally yours,

G. H. T. JOHNSON.

In conclusion, let us hope that the approaching fiscal year may be characterized by the continued good-will, harmony, and fraternity that have characterized the members of this Board during the past three years, and that the work and achievements of the State Board may be more extensive than ever, and fully appreciated by individuals, families, and communities in every section of this prosperous commonwealth.

Respectfully submitted.

J. W. REDDEN, *Secretary.*

TOPEKA, KAS., June 14, 1888.

THIRD QUARTERLY REPORT.

TOPEKA, September 12, 1888.

Mr. President, and Members of the State Board of Health—GENTLEMEN: Since the annual (fourth) meeting held last June, I have issued the following circular letters: Form 62-A, 63-A, 64-A, 65-A, and 66-A, copies of which were sent to each member of the Board.

Form 62-A contains the resolutions of the Board in reference to the analysis of water by the State Chemist when sent by the county health officers. Form 63-A, containing the resolution of the Board to notify every county health officer of his duty to enforce section 9 of the law creating State and local boards of health, in reference to the reports of death by all practicing physicians. Form 64-A, directed to the county clerks in the counties where no county health officer had been appointed, containing the resolution of the Board that it became the duty of every physician of said county to report births and deaths, directed to the Secretary of the State Board of Health, and requesting the county clerks to have said circular letter published in the official county paper. Form 65-A, being a circular letter directed to the board of county commissioners who had neglected to appoint a county health officer and organize a county board of health, calling their attention to the law making it obligatory without delay, and urging upon them the importance and duty of at once complying with the provisions of said statute. Form 66-A contains the resolution of the Board in reference to its action to render the vital statistics more thorough, and section 9 of the law creating the State Board of Health, and urging upon every physician, as well as county health officer, to see that said law was strictly enforced. This circular was sent as far as possible to the practicing physicians in those counties where no county health organization existed. All of said circular letters were thoroughly and promptly distributed by the Secretary of the State Board of Health, county health officers and county clerks. Copies of said circular letters are herewith submitted:

[Form 62-A.]

OFFICE OF SECRETARY KANSAS STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, July 2, 1888. }

DEAR SIR: The State Board of Health have passed the following resolutions in reference to the examination of samples of water by the chemist and microscopist of the Board:

"Resolved, That the chemist of the State Board of Health be directed to make a thorough analysis and examination of one sample of water sent him by the city authorities of any city where they are putting in or preparing to put in any water-works system; said expense of examination to be paid by the State Board of Health out of the funds appropriated for sanitary investigation; but that all subsequent analyses of the same water must be paid by the said city authorities.

"Resolved, That in all cases of dispute as to the purity of the water supply, and where said examination is ordered by the county commissioners, then the expense of said examination shall be paid by the State Board of Health out of the funds appropriated for that purpose."

This action, in consequence of the limited appropriation for this purpose, and in order to aid, as far as possible, the different counties of the State, was deemed abso-

lutely necessary. The resolutions are clear and explicit, and you will have no trouble in understanding them.

We hope that the result of these examinations will prove of material benefit to many communities and counties.

Yours truly, J. W. REDDEN, *Secretary, and Executive Officer.*

[Form 63-A.]

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA KANSAS, July 2, 1888. }

DEAR DOCTOR: The State Board of Health, at its recent session, passed the following resolution:

"Resolved, That the Secretary of the State Board of Health, as its executive officer, is hereby directed to notify each county health officer to inform the practicing physicians in their county that on and after August 1, 1888, any violations of section 9 of 'An act to create State and local boards of health' will be prosecuted. And he is hereby directed to prosecute any such violation, and is hereby authorized to employ additional counsel, whenever deemed necessary, to assist the county attorney in said prosecution."

Section 9 is as follows:

"It shall be the duty of every physician practicing his profession in the State of Kansas to keep a record of the deaths occurring in his practice, or that may come to his knowledge where death occurs without medical attendance, noting the form of the disease, and as far as possible the cause which produced it, and to report the same to the local board of health where the same occurs, at the time and in the manner prescribed by the State Board of Health; and any failure to do so will subject said physician to a fine of ten dollars for each and every offense."

You will please have this circular letter published in the leading papers of your county, and see that every practicing physician or midwife in the county receives a copy of the same, either through the papers or by circular letters. Whenever you ascertain facts that this law is violated, have the county attorney prosecute said violators. If at any time you have any difficulty in enforcing the law, write me freely, and I will be glad to give you any suggestions or advice. If you and the county attorney should deem it necessary, at any time, to have me visit you in relation to this matter, notify me promptly, and I will be present as early as possible.

We hope that this method will render our vital statistics more thorough and accurate.

Yours truly, J. W. REDDEN, *Secretary and Executive Officer.*

[Form 64-A.]

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, July 2, 1888. }

County Clerk of ——— County—DEAR SIR: The State Board of Health at its last session passed the following resolution:

"Resolved, That in counties where no health officer has been appointed, or where the county commissioners refuse or neglect to appoint a county health officer, physicians of said county or counties be required to report the vital statistics, as required by law, direct to the Secretary of the State Board of Health, at Topeka."

Will you have the kindness to have the above resolution published in two of the leading papers of your county; and also send me a list of the names and post-office addresses of all the practicing physicians in your county, during the present week, that I may be able to send each one of them, directly from this office, a copy of this resolution.

Your kind attention will greatly oblige.

Yours truly, J. W. REDDEN, *Secretary and Executive Officer.*

[Form 65-A.]

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, July 13, 1888. }

Board of County Commissioners, ——— County—DEAR SIRS: Inclosed please find two copies of the law creating State and local boards of health; and I refer you

especially to sections 7 and 8, on page 5 of said pamphlet, in reference to your duty in appointing and maintaining a county board of health.

You should, by all means, at the next session of your Board, appoint a competent physician as local health officer, with a salary sufficient to justify him in giving all necessary attention to the duties pertaining to his office. Four-fifths of the counties have such county health organizations, with competent physicians as county health officers, and the other counties, we have reason to believe, in a very short time will adopt such organizations.

During the past year hundreds of valuable lives have been saved, and thousands of dollars to the communities and counties where such organizations exist, by reason of the active sanitary measures taken by such health officers in preventing and controlling epidemics of small-pox, diphtheria, scarlet fever, and typhoid fever; and also, by such measures, prevented the stagnation of business, and thus guarded the communities and families against fatal epidemics and panics that would result therefrom. I hope within a month to receive official notice of the favorable action of your Board, and the certificate of the county clerk of the name and residence of the county health officer appointed by you.

Prompt and favorable action in this matter will confer untold blessings upon the people of your county, and a great favor upon the sanitarians of the State, who are laboring for the health and happiness of the people.

Yours truly,

J. W. REDDEN, *Secretary and Executive Officer.*

[FORM 66-A.]

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, July 20, 1888. }

DEAR DOCTOR: The State Board of Health, at its recent session, passed the following resolutions:

"Resolved, That the Secretary of the State Board of Health, as its executive officer, is hereby directed to notify each county health officer, or county clerk, to inform the practicing physicians in their county, that, on and after August 1, 1888, any violations of section 9 of 'An act to create State and local boards of health,' will be prosecuted. And he is hereby directed to prosecute any such violation, and is hereby authorized to employ additional counsel, whenever deemed necessary, to assist the county attorney in said prosecution."

Section 9 is as follows:

"It shall be the duty of every physician practicing his profession in the State of Kansas, to keep a record of the deaths occurring in his practice, or that may come to his knowledge where death occurs without medical attendance, noting the form of the disease, and as far as possible the cause which produced it, and to report the same to the local board of health where the same occurs, at the time and in the manner prescribed by the State Board of Health; and any failure to do so will subject said physician to a fine of ten dollars for each and every offense."

"Resolved, That in counties where no health officer has been appointed, or where the county commissioners refuse or neglect to appoint a county health officer, physicians of said county or counties be required to report the vital statistics, as required by law, direct to the Secretary of the State Board of Health, at Topeka."

You will please have this circular letter published in the leading newspapers of your county, and see that every practicing physician or midwife in the county receives a copy of the same, either through the papers or by circular letters. Whenever you ascertain facts that this law is violated, have the county attorney prosecute said violators. If at any time you have any difficulty in enforcing the law, write me freely, and I will be glad to give you any suggestions or advice. If you and the county attorney should deem it necessary, at any time, to have me visit you in relation to this matter, notify me promptly, and I will be present as early as possible.

The Secretary of the State Board of Health will furnish the necessary blanks for reports to physicians in the counties where there is no county health officer.

We hope that this method will render our vital statistics more thorough and accurate.

Yours truly,

J. W. REDDEN, *Secretary and Executive Officer.*

The preparation and distribution of the aforesaid circular letters, and the correspondence naturally resulting therefrom, have required much time and labor; and we are pleased to state that the information coming from the different county health officers, and the reports of the return certificates of births and deaths sent directly to this office from the practicing physicians in those counties without local health organizations, give favorable indications and assurance of not only willingness but the disposition on the part of practicing physicians to make the reports more regular and complete in the future.

At the beginning of the present quarter there were eighty-one counties in the State with active and progressive county health officers, and twenty-five counties without any efficient health organization. Since that time Anderson county has organized a county health board, appointing D. C. Van Stavern, M. D., of Garnett, as county health officer, and Haskell county organized a county health board, with W. T. Mills, M. D., of Santa Fé, as county health officer, and the commissioners of Russell county appointed J. W. Long, M. D., of Russell, as county health officer, in place of W. E. Fowler, M. D.

Of the twenty-three counties in the State, I am pleased to state that the city of Leavenworth has an efficient, active and progressive board of health, who have been laboring diligently and with some show of success for securing a county health organization. The special report of said city health board, by its able and efficient Secretary, Dr. Bidwell, made to the Secretary of this Board, upon the management of the origin, progress, control and suppression of the recent small-pox epidemic in that city, is an evidence of the skill, firmness, ability and value of said city health board, and their labors and achievements in their work for the benefit of the city cannot be too highly commended by all progressive sanitarians in this State.

Of the twenty-three counties without county health officers, fifty-two of the practicing physicians of ten of said counties have reported directly to this office the deaths and births occurring in their practice since August 1, when the resolution of this Board required the physicians of said counties to report births and deaths directly to this office. The following returns have been received:

<i>Counties.</i>	<i>Births.</i>	<i>Deaths.</i>	<i>Still-births.</i>
Atenison.....	14	16	2
Doniphan.....	25	14	3
Franklin.....	27	15	1
Gray.....	4	1	.....
Jackson.....	8	4	.....
Jefferson.....	13	11	1
Kiowa.....	.....	1	.....
Leavenworth.....	24	14	.....
Neosho.....	12	5	1
Republic.....	2	.....	.....
Totals.....	129	81	8

This shows a movement in these counties in the right direction, and a willingness on the part of practicing physicians to give their time and labor for the purpose of making the vital statistics of our State more accurate, reliable, and valuable.

The following synopses of the monthly and quarterly reports of the following County Health Officers may be of interest to this Board:

Dr. Gillette, of Barber county, reports for the month of August, eighteen births, four marriages, two still-births, and five deaths; three of these were from diarrhœal diseases, one from pyemia, and one from remittent fever; three of these deaths were under five years of age.

Dr. Miller, of Crawford county, reports for the month of July, one death from scarlet fever, one from cerebro-spinal meningitis, two from whooping-cough, one from puerperal fever, five from consumption, and one from acute lung disease; deaths under five, thirteen; deaths from all causes, not including still-births, twenty-seven; three still-births, and fifty-seven births; while for the month of August he reports seventy-five births, two still-births, and twenty-eight deaths, eighteen of which were under five years of age; one was from acute lung disease, eleven from diarrhœal diseases, two from whooping-cough, one from cerebro-spinal meningitis, and one from measles.

Dr. Musgrave, of Elk county, reports that during the past quarter dysentery has prevailed in the neighborhood of Howard and Moline to some extent; that one prisoner is confined in the county jail, and five inmates in the poor-house; that all of them are supplied with plenty of good water and food; and that the county buildings are well ventilated, thoroughly disinfected and in good sanitary condition.

Dr. Loomis, County Health Officer of Graham county, reports for the past quarter thirteen births, twenty-two deaths, and one still-birth. Of the deaths, one was from typhoid fever, twelve from diarrhœal diseases, four from consumption, one from typhlitis, one from heart disease, one from dropsy, one from tonsilitis, one from lightning, and one from cyclone; that they have no prisoners in the jail or inmates in the poor-house. There has been no general sickness so far this year. Rains have been abundant; some of these storms have been almost waterspouts; high winds have prevailed and two cyclones, the last June 30th, which killed a boy eight years old. For two or three weeks past the weather has been excessively hot. Diarrhœal diseases, among children especially, are becoming more prevalent; no deaths, however, from that source. I hope to get statistics in better order in my next report. The physicians generally make reports of births and deaths; I know of but two exceptions.

Dr. Crew, of Jewell county, reports for the month of June, seven marriages, eight births, one still-birth, and two deaths; and has confidence that the reports in future will be more thorough and complete.

Dr. Keeney, County Health Officer of Logan county, reports as follows:

Seven births and three deaths, two of which were from diarrheal diseases and one from acute lung disease.

Dr. Robinson, of Miami county, reports the general sanitary condition of that county good, and no contagious diseases have prevailed in that county. That the number of inmates of the Insane Asylum at Osawatomie on September 5, were four hundred and ninety-four, two hundred and seventy of whom were men and two hundred and twenty-four were women.

Dr. Skene, County Health Officer of Pottawatomie county, reports for the past quarter as follows: Twenty-four marriages, sixty-nine births, one still-birth, and fifteen deaths; of this number, one died from cerebro-spinal meningitis, one from whooping-cough, two from puerperal fever, seven from diarrheal diseases, three from consumption, three from acute lung diseases, two from old age, and one from heart disease.

Dr. Donnell, of Rooks county, reports that a new jail has been built in their county of approved form, modern in design, and with sanitary appliances. The general health of the county is good; the sanitary condition of public buildings commendable. The county and city boards have executed efficient sanitary measures, and have had no outbreak of disease dangerous to public health; that typho-malarial fever, which prevails quite extensively at this time of the year, has been very mild this season. Have had considerable infantile diseases, but of a mild type.

Dr. Long, County Health Officer of Russell county, reports nine births and eight deaths, one of which was from scarlet fever, two from cerebro-spinal meningitis, one from diarrheal disease, and two from child-birth; that scarlet fever has prevailed in the northwestern portion of the county in two families; that there is one prisoner confined in the jail and six inmates in the poor-house, the water and food served in each is pure and good. The grounds and surroundings of the schools, jail, court house and county house are all in good order. The sanitary condition of the county is fair. "We have no stagnant pools or marshes within the county. There is an epidemic of malarial fever prevailing in the city of Russell and vicinity, but I am unable to give any cause or assign any reason why we should have malarial fever in this altitude."

Dr. Williamson, of Shawnee county, reports for the present quarter as follows: The following diseases dangerous to public health have occurred during the past three months: one case of small-pox, fourteen of measles, fifty-five of scarlatina, nine of diphtheria, two of dysentery, and one of typhoid fever; that there are thirty prisoners confined in jail, and twenty-two inmates in the poor-house.

The following letter from the Secretary of the Leavenworth City Board of Health is well worthy of our consideration and approval:

OFFICE OF SECRETARY, LEAVENWORTH CITY BOARD OF HEALTH, }
LEAVENWORTH, KANSAS, June 26, 1888. }

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: Our small-pox report is as follows: Fifty cases in all to date. Of these, all but three or four are

convalescent. One, a colored girl, 25 years old, was nearly dead with pneumonia when she took small-pox in a confluent form, and died last night. No others are likely to succumb. I inclose a letter which we are sending to the doctors here. It explains our object in issuing it, and I wish to ask if you will temporarily consider our Board the health officer of the city, (for I don't see how we can extend our jurisdiction beyond, into the county,) and send me blanks for registration and notification, as also a few pamphlets concerning infectious and contagious diseases. Do the health officers use a large record book or keep reports on separate blanks? There are certain physicians here anxious to see sanitary laws enforced for the good of the city, but, on the hand, there is a spirit of routine and disinclination for any change as firmly grounded as the culture of Boston. However, the Medical Society heartily indorsed our action in issuing the letter, and will help in the matter.

Respectfully yours,

W. D. BIDWELL.

The following circular letter was issued by said City Board of Health, as referred to in the above letter, and is herewith appended:

OFFICE OF SECRETARY, LEAVENWORTH CITY BOARD OF HEALTH. }
LEAVENWORTH, KANSAS, ———, 188—. }

The need of a registry for births and deaths and for contagious and infectious diseases, has long been felt in this city and county, but having no health officer no records have been kept heretofore.

Until a health officer is appointed, the Board of Health will attempt the keeping of such records, and to that end your active cöoperation is requested.

It will of course be something of a burden on each physician, but it will be lightened so far as possible by supplying blanks on which to make such reports.

Flags marked "Small-pox," "Diphtheria," "Scarlet Fever," "Measles" and "Whooping-cough," will be provided and placed on all houses where these diseases exist, and the families quarantined for a reasonable length of time.

In order that epidemics may be avoided, it is urged that all cases of infectious disease be reported to the Board as soon as they are seen, and that any doubtful cases should be isolated and carefully watched. Pamphlets giving directions as to isolation, fumigation and infection, may be obtained from the Board.

Signed for the Board of Health.

W. D. BIDWELL, *Secretary*.

We are glad that we have the privilege of presenting the following concise, full and interesting report, by the Secretary, Dr. Bidwell, of the recent small-pox epidemic as it prevailed in Leavenworth in April, May and June of the present year:

SMALL-POX IN LEAVENWORTH IN 1888.—(*Reported by W. D. Bidwell, M.D., Secretary City Board of Health.*)

OFFICE OF SECRETARY, LEAVENWORTH CITY BOARD OF HEALTH, }
LEAVENWORTH, KANSAS, July, 1888. }

The small-pox was brought to Leavenworth this year by a young man named Miller, who gave the following account of himself: When at home he resides with his father, brother, sister and stepmother near the Sixth-street bridge; but for some time previous to April 10th he had been working in St. Louis. On that day he felt sick; had pain in his limbs and was easily tired. Growing worse, he started for home April 14th, and while on the train noticed pimples breaking out on his forehead. Reaching home he felt somewhat better, and no physician was called until two weeks later, when J. N. McCormick was called in to see some other member of the family, and (according to Miller's account) told them it was chicken-pox, and that they must keep quiet, not get wet, etc. After the case became known to the

Board of Health (which was not till May 14th) Dr. McCormick stated to a police officer and to two members of the Board that he told the Millers it was small-pox; but in either event he never reported the case, and it was only through the neighbors that the disease was finally discovered.

On May 10th Mrs. Miller and the other children began to have headache and fever, and May 13th they moved to a house of Mrs. Miller's two and a half miles west of the city. These facts were first discovered and verified by the Board of Health on the evening of May 14th, and inquiries were made at once as to the places visited by members of the family during the previous two weeks, and also to all who had been exposed by being at Miller's house. The result was very discouraging. It was found that members of the family had been working out until taken down; that many of their friends had visited them, and that young Miller had attended church, and also the theater. Without doubt over a hundred people residing in different parts of the city had been exposed to contagion, and the only thing that could be done was done at once. Those who had been exposed were notified of their danger, preparations were made for transferring the sick to the pest-house, and the city schools were notified to refuse admittance after May 21st of all unvaccinated children. This move stirred up no little opposition, and the results were characterized as "the doctors' boom"; but of its necessity and wisdom there can be no doubt when I state that between 3,000 and 5,000 persons were vaccinated, and there are still a goodly number of the unvaccinated in town. Had it not been for the protection resulting from this "boom," the number of cases would doubtless have been doubled or trebled. A second obstacle to overcome was that of providing medical attendance for the pest-house. During previous seasons this duty had been performed by the County Physician, but as the clause, "The city to pay for any medical attendance that may be necessary over and above the services rendered by the County Physician," in a contract between city and county, was the only specification of duty to be found, the County Physician declined to attend the pest-house patients, claiming that thereby he would be incapacitated for his obligations to other county patients; but at the next succeeding meeting of the Council this was provided for by the appointment of a physician for this service, to be remunerated out of the city treasury.

Other obstacles were met with, in the prejudice against having the houses flagged, especial opposition being met with in one case of varioloid, where, in the face of the opinion of seven physicians who saw the case that there was danger to others, the family insisted that there was none, and foolishly tried to expose others. The need of a competent county health officer was greatly felt on more than one occasion.

It is unnecessary to give a detailed history of each case, but a table has been prepared which gives most of the particulars at a glance. A general summary and account of methods used in eradicating the disease is also appended.

There were in all, including variola and varioloid, fifty cases of disease. In twenty the eruption was so abundant as to be confluent on the face; in six of these the eruption was confluent in patches on the body and limbs. Eight were undoubtedly varioloid, the patients being partly protected by previous vaccination. Seven cases were doubtful, giving a history of vaccination, but having no scars. Thirty-five had never been vaccinated at all previous to the scare. One man had been vaccinated when a mere boy and had a well-marked scar; at the age of 20 he had varioloid while caring for a friend in a small-pox hospital in Louisiana, and this year, at the age of 34, he had a second though very mild attack of varioloid. Three cases had two scars each, and in these the disease was quite light. In the majority of cases the form of the disease was quite mild.

One colored woman, Fanny Elder, who was sick with pneumonia before taking the small-pox, died from exhaustion on the 20th day of the disease. This was the

only death in the whole fifty cases. The period of incubation seems to have been quite long in most cases, being three weeks in some. The period of invasion varied from twelve hours to five days.

One thing attracted my attention, which is referred to by some writers on variola, and that is vaccination performed after exposure and before any prodromal symptoms taking at the same time that the disease is developing. I noticed this occurrence in several cases.

Seventeen of the fifty were white, and thirty-three colored; four of the severe cases were among the whites. The fifty cases represent nineteen distinct families, scattered throughout the city.

The methods resorted to, to check the spread of the disease, were as follows: Where the family had room and facilities for isolation at home, one room was stripped of all unnecessary furniture, and the patient and his attendant confined to it, disinfectants being used freely throughout the house, and strict cleanliness enforced. The house was flagged, and no person allowed to enter or leave the premises from the time of the discovery of the disease till the scabs were all taken off the patient. The whole house disinfected and fumigated, according to the directions of the State Board of Health, and all infected articles that could be spared were destroyed by fire. Where it was impossible to isolate at home, the family was removed to the pest-house grounds, where the sick were quartered in the house, and those who had been exposed were quarantined in tents. All who could be reached were vaccinated. In nearly every case it was easy to ascertain the origin of the disease; the colored people having worked in white families where white children took it, or else the two parties had occupied contiguous seats at church or in the theater.

Several different compositions were tried to ascertain the best preparation to prevent pitting and allay itching. Of these, carbolized glycerine and a mixture of wood charcoal and sweet oil (the latter preparation suggested by Dr. Towner, of Wichita,) proved most satisfactory.

A small house belonging to the Millers was considered to be so infected as to be unsafe as a residence, and it was purchased and burned by order of the Council.

In concluding this report, the writer feels in duty bound to commend the action of Acting-Mayor Dassler in ordering the Marshal to take any measures to stamp out the disease at once, and also takes pleasure in expressing his personal obligation and that of the Board of Health to City Marshal Roberts and the Metropolitan Police, for their intelligent and untiring assistance in checking the spread of the disease.

<i>Date of first symptom</i>	<i>Name.</i>	<i>Age yrs.</i>	<i>Form of disease.</i>	<i>First symptoms.</i>	<i>Date of eruption.</i>	<i>White or col'd.</i>	<i>Vaccination.</i>
Apr. 10.	— Miller, boy	20	Discrete....	Pain in limbs.....	Apr. 14,	C.	Never vaccinated.
May 10.	— Miller, girl.....	17	"	Headache, fever..	May 12,	C.	" "
" 10.	— Miller, boy	18	Confluent ..	" " " " ..	" 12,	C.	" "
" 10.	Mrs. Miller.....	34	"	" " " " ..	" 12,	C.	" "
" 10.	Wm. Bell	16	Near confl.	Pain in neck and chills.....	" 15,	C.	" "
" 10.	Frank Knox.....	14	Confluent..	Back and head- ache, high fev..	" 12,	C.	" "
" 12.	— Swoboda.....	9	Discrete....	Fever.....	" 15,	W.	" "
" 13.	Harry O'Banion	10	Near confl.	Stomachache.....	" 15,	C.	" "
" 13.	Ella Smith	14	Confluent..	He'dache, cramp in bowels.....	" 16,	C.	" "
" 14.	Nan. Davis.....	18	"	Severe backache, high fever.....	" 16,	C.	Vac. some years ago; scar, without pits.
" 14.	Nettie Elder	19	"	Headache, fever..	" 16,	C.	Never vaccinated.
" 14.	Fred. O'Banion.....	7	Discrete....	Fever; no pain...	" 17,	C.	Vac. May 16, 1883.
" 14.	Hattie Johnson.....	13	"	Headache; little fever.....	" 17,	C.	Vac. some years ago; did not take.

TABULAR VIEW OF THE SMALL-POX EPIDEMIC IN LEAVENWORTH, IN 1888—CONCLUDED.

Date of first sympt'm	Name.	Age yrs.	Form of disease.	First symptoms.	Date of eruption.	White or col'd...	Vaccination.
May 15..	Helen O'Banion.....	19	Near confl.	Headache.....	May 17,	C.	Vac. 5 years ago; did not take.
" 15..	Robbie Jackson.....	7	Confluent..	"	" 17,	C.	Vac. May 16, 1888.
" 17..	Miss Doyle.....	20	"	Head and back-ache, vomiting,	" 23,	W.	Vac. some years ago; one good scar.
" 17..	Willie Newman.....	8	"	Severe stomach-ache and fever,	" 20,	W.	Vac. some years ago; no scar.
" 20..	Eliza Jackson.....	22	"	Headache; little fever.....	" 23,	C.	Vac. May 19, 1888; took with small-pox.
" 21..	Hugo Jester.....	12	Discrete....	Headache, vom-iting, leg-ache,	" 24,	W.	2 scars; vac. 6 yrs. ago.
" 22..	Rosie Imblow	10	"	Headache, vom-iting, b'ckache,	" 23,	W.	Never vaccinated.
" 24..	Jake Wellman.....	20	Confluent..	Headache, vom-iting, b'ckache,	" 26,	W.	Vac. at 3 yrs. old; no scar; also May 24, tkg.
" 24..	May Moore.....	3	Discrete....	Headache, fever..	" 29,	C.	Never vaccinated.
" 24..	Omar Willeford.....	36	Mild vario.	Headache, fever, and chill.....	" 27,	W.	Vac. 20 yrs. ago; 1 good scar; var. 14 yrs. ago.
" 24..	— Swoboda.....	1 $\frac{5}{12}$	Discrete....	Headache, fever..	" 27,	W.	Vaccinated 1 week ago.
" 25..	— Swoboda.....	4	"	" " " "	" 25,	W.	" 1 " "
" 25..	— Swoboda.....	6	"	" " " "	" 25,	W.	" 1 " "
" 25..	— Swoboda.....	16	"	" " " "	" 25,	W.	" 1 " "
" 25..	Mrs. O'Banion	45	"	" " " "	" 29,	C.	" 2 " "
" 27..	Frank Bell.....	56	"	" " " "	" 30,	C.	Vac. 6 yrs. ago; 2 good scars.
" 28..	Willie Bailey.....	$\frac{1}{2}$	Near confl.	" " " "	June 1,	C.	Vac. 3 weeks ago; did not take.
" 28..	Frances Moore.....	17	Discrete....	Headache, fever, and backache..	May 31,	C.	Never vaccinated.
" 28..	Sherman Johnson...	16	"	Head and side-ache	June 1,	C.	Vac. 2 yrs. ago without taking; May 21 and 27, taking.
" 29..	John Johnson.....	8	"	Head and side-ache	" 1,	C.	Vac. May 21 and 27, tak- ing slightly.
" 29..	Clara Johnson.....	4	Near confl.	Head and side-ache	" 1,	C.	Vac. May 21 and 27, tak- ing slightly.
" 30..	Alice O'Banion.....	13	Discrete....	Head and stom-achache.....	" 1,	C.	Vac. 7 yrs. ago without taking; May 16, took.
" 31..	Lizzie Parker.....	20	"	Head and stom-achache.....	" 2,	C.	Vac. 1 week ago; did not take.
June 1..	Don Rolman.....	9	Mild vario.	Tired feeling, fev. H'd and b'kache, pain in chest...	" 1,	W.	1 good scar.
" 2..	Betty Moore.....	13	Near confl.	"	" 3,	C.	Vac. 2 weeks ago, and taking well.
" 2..	— Wiseman, boy...	"	Mild vario.	"	"	W.	"
" 2..	— Wiseman, girl..	"	"	"	"	W.	"
" 4..	Lillie Elder	11	Discrete....	"	June 4,	C.	Vac. 2 weeks ago, and taking.
" 5..	Fannie Elder	25	Confluent..	Sick with pneu- monia.....	" 9,	C.	Never vaccinated.
" 11..	Cora Dehow.....	20	Near confl.	Head and back-ache.....	" 14,	C.	Vac. when child, but did not take.
" 11..	Fred. Hall.....	22	Confluent..	Head and back-ache, fever.....	" 15,	W.	Vac. when child; 1 good scar.
" 13..	Otto Jester.....	1 $\frac{1}{2}$	Discrete....	Tired feeling.....	" 15,	W.	Vac. 3 weeks ago, not taking.
" 13..	Leo Jester.....	3	"	" "	" 15,	W.	Vac. 3 weeks ago, not taking.
" 13..	Anastasia Jester....	11	"	" "	" 15,	W.	Vac. 3 weeks ago, not taking.
" 14..	Harry Parker.....	1 $\frac{3}{4}$	"	Headache, fever..	" 16,	C.	Vac. 4 weeks ago and 2 weeks ago, not tak'g.
" 14..	Gertie Parker.....	4	"	" "	" 16,	C.	Vac. 2 wks. ago, taking.
" 18..	Mrs. John Hunt.....	25	Mild vario.	Headache, fever, backache.....	" 20,	W.	Vac. 1 mo. ago; took; 2 old scars.

We have also received the following information of small-pox in other States:

From Dr. Lindsley, Secretary of the Connecticut State Board of Health, as follows: Under date of July 5th, three cases of small-pox in Norwalk, and one in Canton; origin unknown. August 21st, one case of small-pox at Norwalk, being a laborer; he landed at New York about ten days before the eruption appeared. Under date of August 31st, one case of small-pox at Colchester; this was a man just arrived from California.

Dr. Rauch, Secretary of the Illinois State Board of Health, reports as follows: Under date of August 3d, two additional cases of small-pox at East St. Louis, contracted from cases previously reported; origin of disease St. Louis, Missouri. Under date of August 11th, he reports a case of small-pox near Cahokia; disease was contracted in St. Louis; the case was removed to the pest-house, and all precautions taken.

Dr. Kennedy, of the Iowa State Board of Health, under date of June 28th, reports one case of varioloid at Zoleda; origin unknown.

The following report was received from Dr. Homan, Secretary of the Missouri State Board of Health:

ST. LOUIS, June 30, 1888.

To the Secretary State Board of Health of Kansas—DEAR SIR: During the present month seventeen cases of small-pox have developed in this city, most, if not all being negroes. Upon discovery, the patients were promptly isolated in hospitals, and all needed precautions employed by the local health authorities to prevent the extension of the disease.

An outbreak of small-pox occurred at Moberly, 148 miles northwest of St. Louis. due to importation by a Swiss immigrant, the first case occurring in a child; but the nature of the disease was unknown, or concealed, for some time. Subsequently, nine cases were traced directly to exposure to this primary source.

So soon as the disease was recognized, prompt steps to isolate, vaccinate and disinfect were taken by the local authorities, and recent advice indicates that the further spread of the disease has been arrested. A total of 44 cases occurred within two months.

Very respectfully yours,

GEORGE HOMAN, *Secretary*.

Dr. Lindsley, Secretary of the Tennessee State Board of Health, under date of July 5th, reports ten cases of small-pox at Memphis, and six cases in Nashville. Said cases are clearly traced to St. Louis; prompt isolation, vaccination and disinfection are enforced. Under date of July 12th, he reports five cases of small-pox in the county of Obion; first case, a negro from Memphis, died July 3d. July 11th the four cases of white persons reported were parties who had befriended the negro; isolation, vaccination and disinfection enforced by the county authorities. Under date of July 23d, eight additional cases of small-pox at Memphis, six in Davidson county and three in Rulliford county were reported. All precautions are taken, and he thinks they will soon stamp out the disease.

Dr. Probst, Secretary of the Ohio State Board of Health, reports, under date of August 1st, as follows: "A case of small-pox in Monroe county; they have no direct railroad communication; origin unknown. Isolation of

patient ordered, and vaccination of exposed parties required." Under date of August 23d, he reports another case of small-pox developed at Stringtown. August 30th he reports a case of small-pox at Coshocton. The patient has been removed to quarters outside the village, and thoroughly disinfected; origin unknown.

The following statement bearing upon the above cases will be of special interest:

SMALL-POX IN OHIO.

A case of small-pox developed in a child in Stringtown, Monroe county, a small place on the Ohio river, five miles above Matamoras. The child had come from New London, Ohio, and was taken sick shortly after arriving at Stringtown. We have not yet been able to trace the source of infection. The physician (?) first called to the case pronounced it *blackberry rash*, and a number of people went to see a case of this new disease. In this way some thirty people were exposed to small-pox before the nature of the disease was determined.

On receipt of telegrams announcing the disease, we immediately sent a small supply of fresh vaccine virus to places where exposed persons resided, and had them vaccinated. The patient was isolated, and the adjoining towns in Ohio and West Virginia established quarantine against Stringtown.

About three weeks elapsed, and, as no new cases were reported, we were congratulating ourselves on having stamped out the disease, when a second case was reported. This case is in the same family as that in which the first case occurred. The patient has been isolated, and all precautions taken to prevent the further spread of the disease.

The following is reported by Dr. Lee, Secretary of the Pennsylvania State Board of Health: June 30th, he reports eighteen cases of small-pox in Philadelphia which have developed since June 14th, during which time eight deaths have been reported. July 1st, he reports seventeen cases of small-pox since last report, and two deaths during the same period. July 12th, he reports seventeen cases of small-pox at Philadelphia, and three deaths. Under date of July 24th, twenty-one cases of small-pox and three deaths. Under date of August 1st, he reports fourteen cases of small-pox, and three deaths. August 7th, ten cases of small-pox in Philadelphia, developed since last report, and five deaths. August 18th, he reports eight cases of small-pox since August 7th, and two deaths. Under August 21st, eight cases of small-pox, and two deaths. Under date of August 29th, he reports three cases of small-pox at Philadelphia, and one death. September 5th, two cases of small-pox at Philadelphia, and no deaths.

The following facts, bearing directly upon the above epidemic, are well worthy of record here—being a "history of the origin of the epidemic of small-pox in Philadelphia given by Dr. Rebecca Fleisher, at the meeting of the Philadelphia Clinical Society, held April 27, 1888":

[From the Medical and Surgical Reporter, August 31, 1888.]

This epidemic originated from carelessness in not recognizing an eruption possessed by a passenger on board the steamship Lord Clive, from England, arriving here February 1, 1888. This eruption was noticed, but not diagnosticated, before he left the steamer. The passenger obtained board at 2024 Garrett street, in the south-

ern section of the city—Twenty-sixth ward; remained there two weeks and then went west. His soiled clothing was laundered by a woman on Forty-first street, West Philadelphia, who later became ill with what the physicians called *measles*; and it was only after she had been ill for a week that the true nature of the disease was recognized. She was then sent to the Municipal Hospital, where she died March 11. This woman's brother-in-law, living in the same house, had varioloid. These were the only persons in the district who were affected.

On March 10, a new boarder at 2024 Garrett street, (the house in which the passenger from the Lord Clive lodged), was placed in the bed occupied by the emigrant, no change of bedding having been made. This man became ill and was sent to the hospital. Later another boarder at the same house became ill, but desired to be nursed at his own home on Moyer street, Thirty-first ward, in the northern section of the city, and thus carried the disease there. It was later learned that two other boarders in the Garret street house had varioloid, but the cases were not reported to the Health Office.

From March 11th to 19th there was no death, but on this latter date a patient from St. Mary's Hospital died.

The rapidity of the spread of the disease was not very great at first, although new cases were reported each day. The course of the spread has been erratic, beginning in the southern and extending to the western and then to the northern section of the city. The wards then in turn affected were the Twenty-sixth, Twenty-fourth, Twenty-first, Fourth, Eighteenth, Thirtieth, Tenth, and so on. The only wards, six in number, until now exempt, are the First, Sixth, Eleventh, Sixteenth, Twenty-first, and Twenty-second. The Second ward heads the list, with thirty reported cases, nine of these being in one house on Temple street, near Twelfth and Fitzwater. There was no doctor in attendance, and a relative, unconscious of the disease, reported at the health office the fact of a boy having been delirious for four days. On a visit to the house, seventeen people were found crowded in three rooms; twelve of the number were sent to the Municipal Hospital, although three of them did not develop the disease. Of the nine who were attacked with small-pox, four died.

The total number of cases reported until within a few days was 176; 81 of these were sent to the hospital; of the latter number 12 died. Of the 95 treated in their own homes, 17 died.

The above facts in reference to small-pox prevailing in the various States have been given more minutely with the belief that they may have a beneficial effect upon everyone who may read the reports of the State Board, in showing the importance and benefit resulting from prompt precautionary measures by way of vaccination, isolation, disinfection, cremation, and strict quarantine, resulting in the prevention, control and suppression of this dreaded plague.

It is a fact worthy of mention that the county health officers, as a rule, are publishing in the official county papers the various orders issued by this Board, as well as the circular letters designed for the practicing physicians in the different counties, and express the belief that in the near future great benefit will result therefrom in securing more prompt and complete returns of vital statistics; and a large proportion of them are also issuing blanks and sending them to the practicing physicians of their respective counties, containing a list of the contagious diseases dangerous to public health, and

requesting monthly returns of the same, stating the number of cases, number of deaths, and the ages of patients, thereby hoping to render more complete and valuable the annual returns of vital statistics to the State Board of Health.

The following communication from Dr. Doig, County Health Officer of Ellsworth county, and the reply of the Secretary, may be of special interest to other county health officers, as the same question is liable to arise at any time in their line of duty:

ELLSWORTH, KANSAS, July 12, 1888.

Dr. J. W. Redden, Topeka, Kas.—DEAR SIR: Your circular of July 2d received, printed in local paper and a marked copy sent to each physician. Can I compel physicians living in adjoining counties to report deaths in their practice occurring in this county? Respectfully, R. L. DOIG, M.D., *County Health Officer.*

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, July 13, 1888. }

R. L. Doig, M.D.—DEAR DOCTOR: Your letter of the 12th received. In reply to your inquiry I would state that any physicians living in adjoining counties and practicing in your county should report to you any deaths in their practice occurring in your county; and I hope they will comply with the law in this respect promptly upon receiving official notice from you so to do.

Yours truly,

J. W. REDDEN, *Secretary.*

The question of the purity of the water supply of the city of Larned gave rise to much uneasiness and discussion by the citizens of said city, and finally resulted in the city authorities sending four different samples of said water to the chemist of the State Board of Health for chemical analyses and microscopical examinations, the State Board paying for the analysis of the first sample, and the city of Larned paying the expense of the other three samples. The following is the report of the chemist in relation thereto:

TOPEKA, KANSAS, September 3, 1888.

Dr. J. W. Redden, Secretary Kansas State Board of Health—DEAR DOCTOR: Inclosed please find analyses of waters Nos. 1, 2, 3 and 4 from J. Mathias Cummins, Health Officer, Larned, Pawnee county, Kansas. Sample No. 1 is intended for the State Board of Health.

CHEMICAL ANALYSIS OF WATER NO. 1.—"FROM SCHOOL HOUSE." *Grains per U. S. gallon.*

Organic matter.....	1.008
Silica and sediment.....	5.302
Alumina and oxide of iron.....	2.017
Bicarbonate of calcium.....	7.198
Bicarbonate of magnesia.....	1.324
Sulphates, and bicarbonates of soda and potash.....	5.466
Chloride of soda.....	3.205

Total solids.....	25.520
Chlorine (combined).....	1.934

	<i>Parts per million.</i>
Free ammonia.....	.094
Albuminoid ammonia.....	.400

MICROSCOPIC EXAMINATION: { Infusoria.
Algae (fresh-water).
Fragments of vegetable tissues.

Although the mineral composition of this water is excellent, I would strongly condemn it for drinking purposes. The heavy amount of organic impurity as shown by the large percentage of organic matter, sediment and albuminoid ammonia, shows this water unfit for drinking purposes.

REID ALEXANDER, M. D.,

Chemist for the State Board of Health.

CHEMICAL ANALYSIS OF WATER, NO. 2.—"CAPT. WEBB."		Grains per U. S. gallon.
Organic matter.....		.114
Silica.....		.497
Alumina and oxide of iron.....		1.227
Bicarbonate of lime.....		7.100
Bicarbonate of magnesia.....		1.238
Sulphates, and bicarbonates of soda and potash.....		8.577
Chloride of soda.....		3.290
Total solids.....		22.040
Chlorine (combined).....		1.985
		Parts per million.
Free ammonia.....		.080
Albuminoid ammonia.....		.102

This is a healthful drinking-water, of good mineral composition, and comparatively free from organic impurities.

REID ALEXANDER, M. D.,

Chemist for the State Board of Health.

CHEMICAL ANALYSIS OF WATER NO. 3.—"FROM CREEK NEAR FILTER."		Grains per U. S. gallon.
Organic matter.....		1.016
Silica and sediment.....		5.060
Alumina and oxide of iron.....		2.010
Bicarbonate of lime.....		7.280
Bicarbonate of magnesia.....		1.210
Sulphates, and bicarbonates of soda and potash.....		4.581
Chloride of soda.....		3.203
Total solids.....		24.360
Chlorine (combined).....		1.933
		Parts per million.
Free ammonia.....		.092
Albuminoid ammonia.....		.403

This water is strongly condemned for drinking purposes, owing to the large amount of organic impurity, albuminoid ammonia, and sediment. The water is contaminated from some source. The mineral composition is good.

REID ALEXANDER, M. D.,

Chemist for the State Board of Health.

CHEMICAL ANALYSIS OF WATER NO. 4.—"FRED LOWERY."		Grains per U. S. gallon.
Organic matter.....		.146
Silica.....		.487
Alumina and oxide of iron.....		1.119
Bicarbonate of lime.....		7.215
Bicarbonate of magnesia.....		1.240
Sulphates, and bicarbonates of soda and potash.....		6.511
Chloride of soda.....		3.290
Total solids.....		20.008
Chlorine (combined).....		1.985
		Parts per million.
Free ammonia.....		.098
Albuminoid ammonia.....		.118

This is a fair drinking-water, of good mineral and organic composition.

REID ALEXANDER, M. D.,

Chemist for the State Board of Health.

Much discussion and uneasiness took place among the citizens of Winfield in reference to the purity of the water supply for said city, and at the request of the County Health Board the chemist of the State Board made an examination of one sample of said water, at the expense of the State fund appropriated for that purpose. The following is the letter of the county health officer in reference to said sample:

WINFIELD, KANSAS, July 24, 1888.

J. W. Redden, M. D., Secretary State Board of Health, Topeka, Kansas—DEAR DOCTOR: I send you to-day by express a sample of water for analysis. It was taken from tap in the office of Mayor Hackney, and marked "Winfield Hydrant Water, No. 1." There has been considerable feeling among the people of Winfield that the hydrant-water was unfit for drinking, and that the Water Company had not come up to its contract with the city. I was instructed by the Mayor and Council of the city of Winfield to forward a sample of this water to you for analysis, which I now do, according to your printed directions. Very respectfully, GEO. EMERSON.

The following is the report of the chemist in reference to said sample of water:

TOPEKA, KANSAS, August 8, 1888.

A sample of the city water used at Winfield, examined at the request of the County Health Officer of Cowley county, Kansas:

ANALYSIS.		
In one U. S. gallon of 58,318 grains.		
Organic matter.....		Grains. 1.002
Inorganic salts.....		10.079
Chloride of sodium .....		.592
Total solids.....		11.664
Chlorine (combined).....		.360
Sulphuric acid (combined).....		.218
Nitrates.....		Heavy trace.
Free ammonia.....		Parts per million. 0.16
Albuminoid ammonia.....		0.28
MICROSCOPIC EXAMINATION: { Infusoria. { Alge (fresh-water). { Inorganic particles.		

Although this is a remarkably pure drinking-water, so far as inorganic (mineral) salts are concerned, it is to be strongly condemned on account of the large amount of organic matter and albuminoid ammonia. Filtering would purify the water and render it safe for drinking purposes, as the largest portion of the albuminoid ammonia is contained in the suspended matter, all of which would be removed by filtering.

REID ALEXANDER, M. D.,

Chemist and Microscopist for State Board of Health.

After said report was received, we find the citizens taking a commendable course, as well as the Winfield Water Company, in making further investigations to find out the best location from which to secure the supply of said water, as well as to ascertain the best location for a filtering-plant. The following communication from the County Health Officer, upon this subject, explains itself:

WINFIELD, KANSAS, August 31, 1888.

J. W. Redden, M. D., Topeka, Kansas—DEAR DOCTOR: I send you to-day, by express, two more samples of water. One is marked "Winfield River Water No. 2," and

was taken from the middle of the Walnut river, just above the mouth of Dutch creek; and the other, marked "Winfield River Water No. 3," was taken from the river about one-half mile above the mouth of the creek. The Winfield Water Company will pay for the analysis, and the object of having the analysis made is in order to ascertain the best point to locate a filtering-plant.

Very respectfully,

GEORGE EMERSON.

The following is the report of the chemist upon the analyses and examination of the water referred to in the above communication:

TOPEKA, KANSAS, September 6, 1888.

Dr. J. W. Redden, Secretary Kansas State Board of Health—DEAR DOCTOR: Inclosed please find reports on Winfield river water, Nos. 2 and 3.

WINFIELD RIVER WATER, NO. 2.		Grains per U. S. gallon.
Organic matter.....		.998
Silica.....		.320
Alumina and oxide of iron.....		.416
Bicarbonate of calcium.....		5.417
Bicarbonate of magnesia.....		2.120
Sulphates, and bicarbonates of soda and potash.....		8.509
Chloride of soda.....		.780
Total solids		18.560
Chlorine (combined).....		.471
		Parts per million.
Free ammonia.....		.280
Albuminoid ammonia.....		.256

MICROSCOPIC EXAMINATION: { Infusoria.
Alge (fresh-water).
Particles of vegetable tissues.

This is a very unhealthy drinking-water, owing to the excessive organic matter and ammonia, showing bad contamination by drainage. The mineral composition is good.

REID ALEXANDER, M. D.,

Chemist and Microscopist of State Board of Health.

WINFIELD RIVER WATER, NO. 3.		Grains per U. S. gallon.
Organic matter.....		.640
Silica.....		.818
Alumina and oxide of iron.....		.397
Bicarbonate of calcium.....		5.002
Bicarbonate of magnesia.....		2.098
Sulphates, and bicarbonates of soda and potash		5.883
Chloride of soda.....		.742
Total solids		15.080
Chlorine (combined).....		.448
		Parts per million.
Free ammonia.....		.220
Albuminoid ammonia.....		.170

MICROSCOPIC EXAMINATION: { Infusoria.
Alge (fresh-water).

The amount of albuminoid ammonia is in excess of the amount allowed by the best health standards for drinking-water. It is however much better than sample No. 2, and a much better location for the source of a water supply. It must be borne in mind that the organic constituents of a river water vary at different seasons, and are directly affected by the local rainfall. If this water was collected during a dry season, I have no hesitation in predicting that it would show an amount of ammonia

within the limits in cold weather and after heavy rains. The albuminoid ammonia in the Kaw river at Topeka, Kansas, has been found to vary from .040 to .220 parts per million at different seasons.

REID ALEXANDER, M. D.,

Chemist and Microscopist for Kansas State Board of Health.

This question of the water supply of the different cities in Kansas is very properly awakening an interest in the minds of the people and arousing their public sentiment. Its importance and practical bearing upon the health and comfort of the people cannot be too closely scrutinized or too thoroughly investigated for the future protection and safeguards of the rapidly growing towns and cities of the State. Here we have a commendable example of the citizens of one of our cities, demanding of the water company unquestionable evidence, first, of the purity of the water supply for drinking purposes; second, the best possible location as to the source of said water supply; and third, the additional safeguard in securing the most desirable place for the location of an approved filtering-plant. This course of action should be followed by the citizens of Topeka in reference to their water supply, for we must bear in mind that the wells from which the water company obtains its supply for the city of Topeka are located below the sewer from the insane asylum, in front of said city, exposed to the contaminating influence of its sewerage system, and that the only means of purification is through a stratum of sand in the bed of the river, which, in the judgment of the best sanitarians and chemical experts, is not by any means a purifying process; and the water from said wells is thus forced into the hydrants of the city without any approved filtering-plant or the use of reliable chemicals for filtering purposes, thus tendering to the inhabitants of the city the water of the river in its natural condition, for drinking and culinary purposes, and relying solely upon the aid of heat and the condition of the stomachs to neutralize and eliminate any vegetable or mineral poisons that may exist or be held in solution in the water—a condition of things that is tolerated by the city Board of Health, borne complainingly by the citizens, but should not be passed by with silent indifference by the reformatory association constituted by the members of the Kansas State Board of Health.

The following communication from a practicing physician is worthy of record here, and shows a willingness on his part to execute a State medical-practice act, and may convince the members of this Board of the necessity of securing a more progressive medical-practice act for the benefit of the members of the medical profession in years to come:

———, KANSAS, June 20, 1888.

J. W. Redden, M. D., Secretary of Kansas State board of health: Under existing Circumstances I write to your honorable Board asking you for A letter in writing to Stand By me. if I have those that is Practising medison and Surgery, and mid-wifery, in this visinity, the largest majority that is A Practising heare has not even got A Surtificat, from eny board of the state the most of them clames to be Gratuats, but got thair Diplomis lost or burnt, by fire, in thair Palmy Days. of in some of the Eastern States the know what the law is but Know one atempts to inforce it.

I have tried to get Some one of the Fraternity to help me Start the ball A rolling but when it comes to the Point of action the back out, and that is the last of it. here is A Short history of the case I want to commence on first. I was treating A Women A Boochers wife for A fibrois tumor of the uterus the bill grew to be of Sum Size and the case was about Wel the commenced to buck about paying their Bill and after A few months I Sued them. about the time I quit Doctoring the woman thair was A Doctor come into town with A Box in the hind Part of his opera Bugy, that he carrud his roots and medisons in, and went from house to house in the country, promising to cure eny case that he could get to take his medisons this Party hired him the Day of the trial to Swer or was going to Prove By his Skill and Knowlige that I had maltreated the Bochers wife. but when he was Put on the Stand and sworn my attorney ast him if he was A Graduate he answered that he had A Syrtificate to Practise medison in Penselvania 14 years ago but it got burnt up and that he had been in Kansas for 7 years but had no Syrtificate that let him out of exposing his Ignorance and Swering to things he Knew nothing about. in Short he was not A competant witness. when we get time thair is lots more of that class that we wil get, on the same terms. nough all that I want is to give me A letter in writing from the Board Signed by the President So that I can Show it to the Prosi-cutting attorney. so that he wil have to atend to his Duty this is all that I want and I will cleen this Part of the country of A lot of Murdrers and venders of *Poison* and liars and blackmalers, for thair name is legeins. the are cheeting the colligies out of thair just Dues ols the Graduets of Colligies out of thair rights and the comon herds of People Know no better. the undertaker loves Such Doctors, but it is Death to the People. if the Dead could but com beck in Spirit this State of wholesale murder cruelty and Suffering would Stop very abruptly Send me my instructions at your erliest opportunity I want to get at them as bad as I hate law there is but little justice in it eny more. I am very Respectfully

DR. ————.

The following communication and answer from another practicing physician, in reference to the traveling itinerant musical medical men and their plan of operation, is another convincing argument in favor of a medical-practice act with stringent provisions, and one that can be enforced:

———, KANSAS, July 8, 1888.

Dr. J. W. Redden, Topeka, Kansas—DEAR SIR: It has become quite common in this part of the State for traveling medicine-men, under different disguises and names, with perhaps a band of musicians or negro minstrels with banjos, to stop with us from one to two weeks, claiming to be able to perform difficult surgical operations, or administer medicines for chronic and other ailments, first securing large fees, and before the result of their prescriptions or operations is known they are gone. Having complied with the State law myself, and at considerable expense and time, I, in conjunction with others of the profession, wish to know whether ourselves and the community cannot be protected from this class, and what steps we can take to do it.

Yours respectfully,

———, M. D.

TOPEKA, KANSAS, July 9, 1888.

———, M. D., ———, Kansas—DEAR SIR: Your letter of 8th just received. Inclosed please find two copies of the Kansas medical-practice act. If you find that these "traveling medicine-men" or charlatans have not complied with the provisions of said act, then your medical association, or any individual physician, has a remedy at law against them, by furnishing the county attorney what evidence you can secure, and request him to prosecute said violators before any justice of the peace of your county, as is his duty to do under the statutes.

Regret very much that our medical-practice act is not more rigid and severe in its penalties against such a class of people. We hope at the approaching session of the Legislature to have a medical-practice act passed that will effectually prevent the operations of such classes of people.

Hope your efforts may accomplish the desired results.

Yours truly,

J. W. REDDEN, *Secretary.*

The following communication from a medical specialist is recorded for the information of the profession and the public:

———, KANSAS, August 1, 1888.

J. W. Redden, M.D.—*Dear Dr.:* Received package containing books, also your postal. I do not follow the general practice, my specialty is Throat, Lung, and Chronic diseases, and a *specialist* on Typhoid and Enteric fever, one cause for all diseases. *Microbes* and *Wm Radams Microbe Killer* will cure all diseases. I kill the *Microbes* and let the *people live*. If I should have any case to report will comply with the law.

Respectfully,

———, M. D.

The following letter from a practicing midwife is a fair sample of the qualifications of others in that line of business, and is recorded for future reference:

———, KANSAS, August 7, 1888.

Mr. J. W. Redden, M.D.: I received your card and books also i am glad to get them, but i am no Physician of Practis i go mearly as a Midwife. i do not Practis eney Medicion therefore i ask what shal i do with my return of Death receipts shal i keep it and in case of a death in my neighborhood shall i return the receipt.

Pleas send me a Midwife book with Plats of difficult births i have tried to get one in C———. and i cant get one Pleas Send me the Price of sutch book i would like one as cheap as i can get it as i am a poor woman and cannot pay a very big price for one. write soon and oblige Yours truly ———, ———, Kas.

The letter below was received from a physician in one of the leading cities in eastern Kansas, and will no doubt be read with interest and amusement by every member of the profession who has any confidence in the value and virtues of vaccination. The following is the registration of said physician: A Magnetic; age 62; native of Pennsylvania; 32 years in practice; graduate of the Hydropathic Institute, at Port Chester, New York.

———, August 8, 1888.

J. W. Redden, M.D., Topek: Your favor of recent date, containing Record of Kansas State Board of Health, came duely to hand, and may all probably be in accord with the requirement of the age, except the provisions for vaccination. But that, I am constrained to believe is the relies of an absurd conception and most egregious failure. And its perpetuation in the highest degree discreditable to the general intelligence of this enlightened age.

This blood poisoning and disease producing practice, seems to be first traceable to the Greeks, as early as 1673, notwithstanding the pretentions of Edward Yanner, some seventy-five years ago. And after a patient and aganizing test of over two hundred years, stands to-day unsupported by single well established evidence that it was ever beneficial to mankind. But, on the other hand, the practice has been confronted by the protests and anathemas of many of the most learned and conscientious physicians of those advancing ages. And also with the most incontrovertible evidence of frequent, sudden and agonising deaths from the introduction

of the filthy poison into the blood of healthy children. And with the transmission of loathsome diseases to other thousands to curse their victims through life, yet the most carefully prepared statistics prove that vaccination does not prevent epidemics of small-pox even in cities where ninety-five per cent. of the inhabitants have been vaccinated. Then why perpetuate such a monstrous stultification of all intelligence emanating from the ignorance and bigotry of the past, in this enlightened and generally progressive age and country? I should be most happy to see the physicians of wide-awake Kansas lead off in a determined crusade of extermination of this pestiferous practice. And it is BOUND "to go," before advancing reason, just as went the lancet, whose claims were being so hotly discussed, pro and con, when I first began the study of medicine some forty years ago. What say you, to the onward movement?

Yours very truly,

Dr. ——— ———.

The following communication from a physician at Bushong, and the answer to the same, shows unquestionably the effect of poisoning from "ptomaines," and the importance of thoroughly investigating all such events. Chemical investigation is showing the existence of such things, and clearly demonstrates the importance of avoiding such results. These events are becoming better understood, and perhaps of more frequent occurrence:

BUSHONG, KANSAS, August 31, 1888.

Dr. J. W. Redden, Topeka, Kansas—DEAR SIR: We had an ice cream and cake festival at our place, and quite a number were taken with violent pains in the stomach and bowels, purging and vomiting, cramps of the muscles, and all the symptoms of arsenic poisoning. Not all that partook of the ice cream were attacked; but all those who ate of a certain cake, (of which I can get no sample,) were taken as above described. The parties who ate the most were taken sooner, and the purging and vomiting did not last so long, but were of greater severity. I tried to get a specimen of the cake, but failed. Inclosed you will find a sample of the baking powder used. It is some new manufacture; will give the name later. I deferred writing in hopes I could send a sample of the cake. I don't think anything poisonous will be found in the powder, and would not have sent it but for a few in the town who insist upon it. I think the poison was put into the cake by mistake and not intentionally, for the family partook of the same cake. These parties prevailed upon me to send the powder and have the chemist test it. What will the costs be? Let me know by postal, and if the parties refuse to foot the bill, we will not have it tested. I am satisfied that the poison was in the cake and not in the powder.

Yours truly,

E. KIRKPATRICK, M. D.

TOPEKA, KANSAS, September 3, 1888.

E. Kirkpatrick, M. D., Bushong—DEAR SIR: Your letter of August 31st, inclosing a sample of baking powder, was received. I have seen the chemist of the Board, and he states that he will analyze the powders sufficiently to determine whether or not they contain poisonous ingredients for five dollars. See your friends, and if they desire to have the analysis made, and you will guarantee the fee, write me and I will order the examination made. But it is my opinion, as well as that of the chemist, that the poison did not exist either in the powder or the cake, but in the ice cream, developing a poisonous ingredient called "ptomaines," similar to that recorded on page 79 of our Second Annual Report, a copy of which I send you with the article marked. Similar incidents have occurred in this and other States from the use of ice cream. Is it not a fact that every person who was affected with the symptoms you speak of partook of the *ice cream*? Could you have procured a sample of the ice cream used on the occasion to which you refer, I am satisfied that a

chemical analysis and examination would have revealed the existence of "ptomaines" in it, which would have produced the symptoms to which you refer. Will be pleased to hear from you at any time.

Yours truly,

J. W. REDDEN, *Secretary.*

I am reliably informed that there has prevailed for some weeks at the Reform School near this city, an epidemic of a low type of fever, perhaps typhoid. The attending physician informs me that cases are daily coming under his supervision and treatment. So far, about fifty cases have occurred, and two deaths have resulted. The physician believes that a post-mortem examination (although not held) would have revealed ulceration of the glands and perforation of the bowels, clearly showing, if true, the existence of typhoid fever; and he promises to make a full report of the epidemic to this Board as soon as it ends.

Although not positive, I am inclined to believe that the annual recurrence of similar epidemics is attributable principally, if not entirely, to the impurity of their water supply. In view of these facts, I call the attention of the State Board to this matter, and suggest the advisability of the executive committee, or a special committee, visiting said institution, with a view of investigating, and if possible ascertain the cause of this disease, and recommending such measures as will insure a permanent and radical removal of same, and thereby promote the comfort, security and health of all the inmates of this State charitable institution.

Respectfully submitted.

J. W. REDDEN, M.D., *Secretary.*

SECRETARY'S FOURTH QUARTERLY REPORT.

Mr. President, and Gentlemen: This session of the State Board of Health virtually closes the labors of the year 1888.

A brief glance of the work accomplished by the State, county and municipal boards will satisfy all observing minds that their labor has been crowned with good results. Notwithstanding the rapid increase in population, the general improvement in cities, towns and rural districts, the cultivation of new soil, the extension of railroads and telegraph lines, the development of the sewerage and drainage system, and the consequent pollution of water sources, the general health has been unusually good, the epidemics less frequent, and the per cent. of mortality reduced.

The labors, aims and results of the State and county health boards have become better known, better appreciated, and they are receiving more generally the indorsement, aid and coöperation of communities, families, and individuals.

Since the September session of the Board, Dr. Jones, as a delegate from the State Board of Health, has attended the sessions of the American Public Health Association, held in Milwaukee, Wisconsin, in November, and will present a report at this session of the proceedings of this association.

The Executive Committee have visited all the State charitable institutions, made thorough examination and careful investigation as to their sanitary conditions and surroundings, and have made full and interesting reports, with valuable suggestions.

The correspondence of the Secretary's office has greatly increased during the present year, and required more time and attention for its consideration. Frequent requests from all sections of the country have been made for the annual reports, as well as an increased demand from citizens of our own State.

Forty-four volumes, reports from State and municipal boards of health, and donations, besides many pamphlets upon interesting sanitary subjects, have been added to the library; so that we now have over two hundred volumes upon Hygiene, Sanitation, and kindred subjects, belonging to the library of the State Board of Health.

In most of the counties which have no county health officer, physicians are sending to the Secretary's office, regularly, reports of births and deaths occurring in their practice.

Since the last session, Anderson county has reorganized her County Health Board and elected D. C. Van Stavern, M. D., as County Health Officer; while in Ellis county, Hugo B. Kohl, M. D., of Hays City, has been appointed County Health Officer in the place of George B. Snyder, M. D., whose term of office expired; and in Lane county, F. L. Rownd, M. D., of Dighton, has been appointed County Health Officer in the place of William M. Woods, M. D., whose term had expired.

There are at the present time eighty-two active county health boards in the State, and during the year their labors have been more abundant, the results more beneficial, and the coöperation more general on the part of the people than ever before; and their annual reports will be more thorough and interesting.

The following synopses of monthly reports are worthy of notice:

The County Health Officer of Crawford county reports for September: 37 deaths, 19 of which were under five years, and 1 still-birth; 1 death from measles, 1 from acute lung disease, 2 from typhoid fever, and 11 from diarrhœal diseases; 69 births were reported. For October: 27 deaths, 10 of which were under five years, and 1 still-birth; 1 death from acute lung disease, 3 from consumption, and 3 from typhoid fever. For November: 16 deaths, 11 of which were under five years, and 3 still-births; 4 deaths were from typhoid fever, 2 from consumption, and 2 from acute lung disease; 34 births were also reported. For December: 87 deaths, 25 of which were under five years of age, and 1 still-birth; 6 deaths were from diphtheria, 4 were from diarrhœal diseases, 5 from consumption, and 7 from acute lung diseases; 84 births were also reported.

The County Health Officer of Graham county reports for September, 6 deaths; 1 from spinal meningitis, 2 from diarrhœal diseases, and 3 from ty-

phoid fever; 3 were under 5 years of age; 5 births and 2 marriages were also reported. For October and November he reports 14 deaths; 1 from acute lung disease, 2 from consumption, 1 from erysipelas, 2 from diarrhoeal diseases, 2 from whooping-cough, and 5 from typhoid fever; 5 of these were under 5 years of age and 1 a still-birth; 12 births and 8 marriages were also reported.

The County Health Officer of Jewell county reports: That the general health of the county during the year has been better than for the past ten years; the people have strict regard to the sanitary condition and surroundings of public buildings.

The County Health Officer of Johnson county reports: That the public buildings are inferior, that the poor-house is kept clean, and the water and food are abundant and healthful. A number of complaints have been made against persons for maintaining nuisances, but in all cases the Board of Health has had them abated.

The County Health Officer of Lane county reports: That there has been little sickness in that county the present quarter; that there are no prisoners in jail; that the school-houses, court-house and jail are all in good sanitary condition.

The County Health Officer of Pottawatomie county reports 19 deaths from all causes; 5 from diphtheria, 4 from typho-malarial fever, 1 from consumption; 6 deaths were under 5, and 8 were still-births; 63 births and 44 marriages were also reported. Typho-malarial fever has prevailed in the northern portion of the county, but it has not been so fatal as in former years. The poor-farm is in excellent condition, and the sanitary arrangements are good. There have been 3 cases of malarial fever in jail, but all of a mild type. The malarial fever in the county seems to be confined to the upland, and Westmoreland has had more than other towns in the county, which is probably due to impure water. A sample of one well has been sent for examination.

The County Health Officer of Rawlins county reports 4 deaths from diarrhoeal diseases, and 1 still-birth; 3 births were also reported. Health remarkably good in the county.

The County Health Officer of Russell County reports 18 deaths from all causes, 4 of which were from diarrhoeal diseases, and 5 under 5 years of age; 13 births and 16 marriages were also reported.

I have issued and distributed during the quarter, pamphlets on Typhoid Fever, Diphtheria, and Scarlet Fever; their Restriction and Prevention, and circular letters in reference to their general distribution, publication and use, samples of all of which were sent to each member of the State Board.

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, October 31, 1888. }

DEAR DOCTOR: I send you by mail to-day several pamphlets on "Typhoid Fever; its Prevention and Restriction." They are intended for general distribution, not only to physicians, but to any family who may desire them.

Your prompt attention in distributing them and carrying out the instructions contained therein is very necessary. Try and get your county papers to publish this pamphlet on typhoid fever, as news that may be of special interest to all their subscribers.

Should more of these pamphlets be needed, write me the number and they will be sent to you promptly. Acknowledge receipt of package.

Yours truly, J. W. REDDEN,
Secretary and Executive Officer.

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, October 31, 1888. }

DEAR SIR: I send you by mail to-day several pamphlets on "Scarlet Fever; its Prevention and Restriction." They are intended for general distribution, not only to physicians, but to any family who may desire them.

Your prompt attention in distributing them and carrying out the instructions contained therein is very necessary. Try and get your county papers to publish this pamphlet on scarlet fever, as news that may be of special interest to all their subscribers. I send this package to you for distribution, as your county commissioners have failed to carry out the provision of the law requiring them to appoint a county health officer for your county.

Should more of these pamphlets be needed, write me the number, and they will be sent to you promptly. Acknowledge receipt of package.

Yours truly, J. W. REDDEN,
Secretary and Executive Officer.

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, October 31, 1888. }

DEAR SIR: I send you by mail to-day several pamphlets on "Diphtheria: its Prevention and Restriction." They are intended for general distribution, not only to physicians, but to any family who may desire them.

Your prompt attention in distributing them and carrying out the instructions contained therein is very necessary. Try and get your county papers to publish this pamphlet on diphtheria, as news that may be of special interest to all their subscribers. I send this package to you for distribution, as your County Commissioners have failed to carry out the provision of the law requiring them to appoint a county health officer for your county.

Should more of these pamphlets be needed, write me the number and they will be sent to you promptly. Acknowledge receipt of package.

Yours truly, J. W. REDDEN,
Secretary and Executive Officer.

Following are copies of the three pamphlets above alluded to, beginning with—

SCARLET FEVER: ITS PREVENTION AND RESTRICTION.

Scarlet fever, scarlatina, scarlet rash and canker rash are several names for one and the same disease. It is very desirable that only the name scarlet fever should be in general use, for so many names have wrought much confusion in the popular mind. Sometimes in scarlet fever the fever is high, sometimes mild. Sometimes the eruption is a vivid-red rash, sometimes it is barely perceptible. Sometimes the inflammation of the throat is very malignant, sometimes so slight as not to be noticeable. No matter how these manifestations of the disease may vary in different cases, it is all scarlet fever, and one attack prevents subsequent attacks. With children, scarlet fever is one of the most infectious of diseases, although at times it be-

haves capriciously. Sometimes children who have never had it escape, although freely exposed to its contagion. Again, the slightest momentary exposure may be sufficient to give the disease.

The poison of scarlet fever is very readily conveyed in clothing or other things even long distances. Such cases as this are so common that almost everybody knows of them: a person calls to inquire about his neighbor's child, who has this disease, opens the door for just a moment, perhaps does not go in, walks a long way home, and then gives the disease to his own children.

It usually attacks children under ten years of age; hence the great importance of preventing children from being exposed to the disease. The latest evidence indicates that scarlet fever never originates from any telluric or atmospheric influence, but is always due to a specific principle or contagium. *In other words, scarlet fever can only occur by infection from a preëxisting case of the same disease.* Countries have been free from it for centuries till imported by commerce. In view of this fact, the great importance of isolation, quarantine and disinfection in preventing the spread of the disease, is beyond question. From want of proper precautions in this respect, it not infrequently happens that scarlet fever will attack successively a large family of children.

The contagion may be preserved for many months in clothing or in rooms. An article, for instance a handkerchief or a doll, may be used by a scarlet-fever child, and then laid away, perhaps a year, and when unpacked give the disease to other children. A letter or paper sent by mail may bear the disease; the hair of the head or the beard may carry it, when the clothing has been changed and disinfected, and this part of the body neglected.

After recovery, for several weeks at least, the scarlet-fever patient continues to be a source of danger to others, as long at least as the skin continues to be rough, and to give off its branny scales of desquamation or peeling.

See that your house and premises are perfectly clean. Look to your cellars, sewers, cess-pools, sinks and water closets, and allow no decaying animal or vegetable matter to poison the atmosphere of your dwelling.

To those who fail to appreciate the serious nature of this disease, these rules may seem numerous, and perhaps unimportant. Prevention is better than cure, and the State Board of Health has presented the best possible means known of restricting and preventing the spread of scarlet fever.

It is hoped that all who may receive this document will not only make such use of it as will tend to disseminate most widely the suggestions it contains, but will also act for the restriction and prevention of scarlet fever in accordance therewith.

PREVENTION.

In spite of the subtle infectiousness of scarlet fever, preventive measures will be rewarded with marked results. Carefulness can keep the infection from being scattered abroad, and disinfection can utterly destroy its power to do harm.

Keep your children away from the disease and away from persons and things that have been where it is. Keep, also, all who have recently been sick of the disease and all who have been where it is, away from your children. Scarlet fever is always a dangerous and often a deadly disease; therefore, it may sometimes be your duty in protecting your children to treat the grossly careless as malefactors. This duty of protecting your family from the danger of scarlet fever is as clear and imperative as would be your obligation to stay the hand that would carry a deadly draught to the lips of your child. One great reason for warding off scarlet fever is, that after childhood this disease is not so fatal, and also after childhood the liability to take the disease is very much lessened. It therefore happens that many escaping

the disease in childhood never have it, although many times exposed to it later in life.

RESTRICTION.

The scarlet-fever patient should be put into a room by himself. It is better to have the room in the upper story and at a distance from rooms inhabited by children. Before the patient is put into the room, remove everything possible which can catch and retain the poison of the disease, viz.: carpets, useless curtains, unused clothing. Notify the Secretary of the local Board of Health at once.

Have some person specially employed as nurse, who is not to visit other parts of the house. No other person, not needed, should be allowed to visit the sick-room, especially those who have children of their own, or who must go where children are. The nurse while attending the patient should wear only such clothing as can be disinfected by boiling, before she goes to other places.

The room should be ventilated as thoroughly and constantly as possible, without incurring the danger of draughts. Especially during convalescence a chill is to be avoided. Ventilation is desirable, both on account of the patient and on account of diluting and letting out the poison of the disease, so that its concentration may not be a danger to others in the house.

Receive the discharges from the throat and nose upon pieces of linen or cotton cloth, which are to be burned immediately. The discharges from the bowels and kidneys should be disinfected with Solution A, Solution B, or Solution C, in large quantity, and buried some distance from the dwelling.

The utmost care should be taken with the clothing of the patient. Do not carry it from the sick-room dry. When removed, it should be dipped into a tub of Solution C, or Solution E, and afterwards boiled in the solution.

No person from a house where scarlet fever is should go into public assemblies, such as schools, churches or concerts, or anywhere into the presence of children who have not had the disease. Much of the contagion of scarlet fever is in the scales which are thrown off from the skin during desquamation; it is well to use frequently during this period, inunction of some oil or other fatty matter to prevent the scattering of these infectious particles. Persons who have had scarlet fever should never be allowed to go to school or mingle in any other way with the public for at least five weeks after the disappearance of the fever and the rash, and not then until the clothing is thoroughly disinfected, and the body has received a disinfective bath, not omitting the head.

In case of death, the body should be inclosed in a sheet thoroughly wet in Solution A, Solution C (eight ounces to the gallon of water), or Solution E, and put into a tight coffin, which should not afterward be opened. The funeral should be strictly private, and in no case should children be permitted to be present.

After recovery or death, vacate the room; burn all things which are of but little value; disinfect everything else, which can be so treated, with liquid disinfectants (Solution A, Solution C or Solution E), and afterwards boil; disinfect the room with sulphur fumigation; wash all surfaces with Solution A, Solution C (four ounces of the solution to one gallon of water), or Solution E, and afterwards with soap and hot water; finally throw open the doors and windows and ventilate thoroughly.

DISINFECTANTS.

Solution A—For excreta, privy-vaults, wood-work and other surfaces.

Solution B—For excreta, privy-vaults.

Solution C—For clothing, the hands, excreta, vaults, furniture, and wood-work.

Solution D—For the person, the hands.

Solution E—For clothing, the hands, the person, excreta.

Boiling—For clothing. *Sulphur fumigation*—for use only where liquid disinfectants cannot be used, or to supplement other methods.

Solution A.

Chloride of lime.....	6 ounces.
Water.....	1 gallon.

Mix. Cost, about three cents, or seventy-five cents a barrel. This is about a three-per-cent. solution. (Decolorizes and destroys fabrics.)

Solution B—"Purple Solution."

Corrosive sublimate.....	2 drachms.
Permanganate of potash.....	2 drachms.
Water.....	1 gallon.

Mix and dissolve. Label, "*Poison!*" Cost, two or three cents a gallon when the chemicals are bought by the pound. (Stains fabrics, etc.) The permanganate of potassium in this solution is used to give it color as a precaution against mistakes. It also, in this quantity, increases the deodorizing qualities of the solution. This is approximately a 1:500 solution of the sublimate; therefore, mixed with an equal quantity of water or liquids to be disinfected, it gives us a 1:1000 mixture. One ounce of this solution contains very nearly one grain of the corrosive sublimate.

Solution C—"Blue Solution."

Corrosive sublimate.....	4 ounces.
Sulphate of copper.....	1 pound.
Water.....	1 gallon.

Mix and dissolve. Label, "*Poison!*"

This is sixteen times stronger than Solution B, and is intended as a standard solution, from which, by dilution with water, a solution of the proper strength for use may be made. To make from it a solution of the proportion of

1:500, add 8 oz. to 1 gallon of water.
1:1000, add 4 oz. to 1 gallon of water.
1:2000, add 2 oz. to 1 gallon of water.

Solution D.

Labarraque's solution.....	1 pint.
Water.....	1 gallon.

Mix. Cost, about twenty-five cents.

Solution E.

Carbolic acid (90 per cent.).....	7 ounces.
Water.....	1 gallon.

Mix. This is approximately a five-per-cent. solution, or in the proportion of 1:21.

Sulphur Fumigation.—To use this effectively, three pounds of sulphur should be burned in a room ten feet square. Every opening into the room, flues, windows, doors, cracks and crevices, must be closed, except the door by which the disinfector is to escape. The sulphur is to be burned in an iron kettle or other vessel set in a tub containing a little water, to guard against fire. Ignite the sulphur with a few live coals, or with a little alcohol, or kerosene and a match. Leave the room quickly, for the fumes are highly poisonous when breathed, and close the door tightly. Let the room remain closed twenty-four hours or more. Then air thoroughly for several days.

Boiling for at least half an hour is a sure way to destroy infection. Immersion in Solution C, one part to two or three of water, or in Solution E, one-half strength, will lessen the danger from infected clothing until it can be boiled.

Should a case of scarlet fever occur near you, you can do yourself and your community great good by seeing that the family have one of these pamphlets.

DIPHTHERIA: ITS PREVENTION AND RESTRICTION.

Diphtheria is a contagious and infectious disease, attacking persons of all ages, but affecting children much more frequently than it does adults. It may be communicated from the sick to the well by means of persons, cups or other articles which pass from mouth to mouth, or through the medium of the air, or it may be spread by means of clothing.

So generally is diphtheria regarded as due to unsanitary conditions, that by common consent it is classified among the "filth diseases;" and when we find it arising apparently independently of sources of infection, spontaneously as it would seem, we may be pretty sure that something is wrong in the health conditions of the home where it is found.

The unsanitary conditions which seem to give rise to diphtheria may be in the direction of the food or water supply; the well may be too near the privy or cess-pool, or sink-drain, or barn-yard, and be polluted by soakage through the filthy soil; or the something wrong may be in the direction of the air supply; the sleeping-rooms and living-rooms are perhaps not ventilated, and the air is re-breathed and poisoned, or a wet and foul cellar is under the house, or sewer-gas goes into the rooms from defective water-closets or other fixtures, or from sink-drains, or privies, or cess-pools.

When once diphtheria has arisen, the law of simple contagion carries it to the rich and the poor, to the cleanly and the uncleanly, but not to all alike. Filth invites disease and gives its germs the most congenial soil in which to develop into pestilence, but cleanliness offers only barren ground for their development.

Diphtheria is a preventable disease. Proper preventive measures are almost invariably followed by the limitation of the disease to the first case or cases. *When diphtheria gets away from the primary cases and makes its escape upon the community, somebody is to blame.* The sooner we accept this as a sanitary maxim, the sooner we shall begin to do our duty as individuals and as communities.

PREVENTION.

Keep away from the sources of the contagion. Do not go where the disease is, if you can help it; and above all, do not let your children go where the disease is. Permit no one to come to your home who has been where it is.

From the dwelling and its vicinity banish all sources of filth, whether of the ground, of the water, or of the air. The ground under and around your house, if not naturally dry, should be thoroughly and deeply drained.

Diphtheria does not come from far through the air, therefore do not shut up your house tightly, thinking thereby to shut out the disease. By so doing you shut in the poison of re-breathed air, which paves the way and makes it easy for the poison of diphtheria to claim your children. Let the sunshine in by day and the pure air both by day and night. When diphtheria is prevalent, avoid all crowded gatherings; especially keep your children from such places.

What is apparently only a common sore throat in adults will sometimes give rise to an outbreak of diphtheria among children; therefore, in all cases of sore throat, prudence would dictate caution in using dishes which the patients have used. A kiss to a child under these circumstances may be the unconscious seal of the little one's death-warrant.

When diphtheria is rife, keep from the children gum, jewsharpes, harmonicas, and other things which go from mouth to mouth.

Be sure that the drinking-water and the milk are pure.

Children under ten years of age are in much greater danger of death from diph-

theria than are adults; but adult persons often get and spread the disease, and sometimes die from it. If you visit a case, bathe yourself and change and disinfect your clothing before you go where there is a child.

It is probable that the contagium of diphtheria may retain its virulence for some time, and be carried a long distance in various substances and articles in which it may have found lodgment. Diphtheria contracted from germs carried several blocks in a sewer, may perhaps be as fatal as when contracted by direct exposure to one sick with it. While it is not definitely proved that the germs of diphtheria are propagated in any substance outside the living human or animal body, it is possible that they may be found to be thus propagated. Therefore, and because the breathing of air laden with emanations from decaying fruit, vegetables, or meat, or from sewers, cess-pools, sinks, and other receptacles of filth, is believed to endanger health, great care should be taken to have the house, premises, and everything connected with dwellings, kept clean and dry; to have sewer connections well trapped and house drains constantly well ventilated; and to have all carriers of filth well disinfected. Do not permit a child to enter a privy, water-closet, or breathe the air from a privy, water-closet, cess-pool, or sewer into which discharges from persons sick with diphtheria have entered, nor to drink water or milk which has been exposed to such air.

Do not permit a child to ride in a hack or other closed carriage in which has been a person sick with diphtheria, except the carriage has since been thoroughly disinfected with fumes of burning sulphur.

All influences which cause sore throats probably tend to promote the taking and spreading of this disease. Among the conditions external to the body liable to spread diphtheria, perhaps the most common are: infected air, infected water, and *contact with infected substances or persons*. Because of this, and as a means of lessening the danger of contracting other diseases, the following precautions should always be taken, but more particularly during the prevalence of any such disease as diphtheria:

Avoid exposure to wind and to breathing cold, dry air; also the use of strong vinegar, or any other article of food which tends to make the throat raw or tender.

Because diphtheria finds the majority of its victims among children, there is not the same attention given to precautions against its spread as there is, for example, in the case of small-pox. And yet there is every reason to believe that, aside from the specific measure of vaccinal protection, the spread of diphtheria may be as effectually controlled by a scrupulous observance of proper precautions.

A preventable disease which not infrequently causes a greater mortality than typhoid fever, small-pox, scarlet fever and measles combined, which during 1880 caused 51.33 out of every 1,000 deaths from all causes in the United States—diphtheria certainly demands the best efforts of all interested in its suppression, and this the more imperatively, since its treatment is as yet confessedly unsatisfactory.

IS DIPHTHERIA CONTAGIOUS?

These facts are published for the purpose of correcting a misapprehension which, to some extent, exists in the public mind regarding the question of the contagiousness of diphtheria. Unfortunately, every year there are found persons or communities which are not yet quite sure that diphtheria is infectious, and, like the person who proves whether the pistol is loaded or not by aiming it at his own head or that of some other person and pulling the trigger, these doubting persons often infect themselves, their families, or their neighbors, and keep up and provide sources of infection which insure the non-extinction of the disease.

The direct communication of the disease is shown in the following instances:

A young lady came home sick with diphtheria in a mild form, and on her arrival her brothers and sisters embraced her. They were all attacked with a malignant type of diphtheria, and one died. The young lady visited her aunt in another family where there were four children, who took the disease, and one died.

At the death of a child from diphtheria, two women helped in laying it out. One of them, who was fifty-three years of age, was attacked in a few days, and died in three more; the other took the disease in a light form, and recovered.

A boy who had had diphtheria visited some relatives. In a few days after his arrival his aunt washed some of his clothing, and was taken sick with diphtheria the next week, and it went through the family—four cases. Before the aunt was taken sick, the boy went to play with another boy, who took the diphtheria and gave it to two other persons in that family.

An only child was taken sick with diphtheria, and died on the fourth day. The young mother in her grief kissed the child and took the disease; within a week she was buried beside her child.

In 1881 there had been no diphtheria in a neighborhood for nearly four years. The school-teacher, during a summer vacation, went to the city, a notorious hot-bed of diphtheria. While there, he contracted what he called a slight sore throat; he returned with this still upon him and opened school; in less than a week there were six lying sick with diphtheria and the school was closed. As the children spread the disease in several families, it resulted in five deaths, three of which were adults.

In the following cases the infection was communicated indirectly through the medium of clothing, or otherwise:

Three children in one family died of diphtheria in the croupous form. The nurse believed it was not possible to carry the disease in clothing, and said she would not change her dress upon leaving the house, and that she was not afraid to take her own children in her lap upon going home. She was admonished against such a foolhardy course. She told the neighbors a week after returning home that she did not change her clothing after coming from the infected house; "and," said she "my children have not got the disease." Ten days after she left the infected house the physician was called and found her family with diphtheria of the most fatal form. One child died in thirty-six hours after it was attacked. These were the only cases that occurred anywhere in the neighborhood of the nurse's home. It is needless to remark, that nurse now believes it is *very contagious*.

A lady went to help care for a family sick with diphtheria; two of the patients died and one recovered. Three weeks after the recovery of the last patient, and after disinfection of the house and the surviving persons, the lady returned to her home, a section where diphtheria had not been known for a long time; five days after her return, her only daughter, a girl of thirteen, took the disease and died.

A woman died of diphtheria; her son brought her clothes and bedding home; his wife washed them, took the disease, and died in less than a week.

The cases like these, which unmistakably show the contagious nature of diphtheria, are innumerable, and at the same time there are innumerable instances in which diphtheria has not been communicated to others, though others have been exposed to it. What does this prove? Not by any means that the disease is not contagious, but, as in scarlet fever, small-pox, cholera and the plague, that all persons are not at all times susceptible to the infection. Another thing which makes the infection of diphtheria doubly dangerous is its persistent vitality. Many cases like the following show that unless care in disinfecting and otherwise be taken, the infection will survive to start mysteriously another epidemic at some future time—months or perhaps years afterwards:

A boy visited a family where there were cases of diphtheria; he took the disease in a light form and recovered. Upon his return home his sister, aged sixteen, took the disease and died in three days. Six months afterwards another sister occupied the room which had been the sick-room, took the diphtheria and died after five weeks' sickness.

A little girl nine years of age was found by the physician to have diphtheria in a malignant form, and died two days afterwards. The sanitary condition of the place seemed very good, and no other cases of diphtheria were in the neighborhood. It was ascertained that the grandfather, of whom the child was very fond and in whose lap she would sit much of the time, had come from a neighboring town to spend a few weeks with them—that in his family eight months previously there had been several cases of diphtheria, one fatal. The children had been sick in a room, adjacent to which was a clothes-press where the old gentleman's clothes had hung. He had no occasion to use them until the present visit to his daughter's. That clothes-press had not been disinfected.

These cases will unmistakably show the dangerously infectious character of diphtheria, and it is hoped that by calling attention to this subject in this special manner, every person and every community may be influenced to be careful not to spread the disease, and to demand of every person the same regard for the rights and the safety of others. *The assurance that a disease is contagious or infectious is an assurance that it is a preventable disease.*

RESTRICTION.

As soon as it is found that a person has diphtheria, he should immediately be separated from the rest of the family and put into a sunny and well-ventilated room, preferably on the upper floor and as disconnected as possible from other rooms, especially the living and sleeping-rooms of children.

Before moving the patient into the room, all needless articles, such as contents of wardrobes, etc., which would catch the infection, should be removed. No other person besides the nurse and necessary attendants should be permitted in the room, and they should take special precautions not to carry the infection. Their communication with the rest of the family should be as restricted as possible.

The secretary of the local board of health, or health officer, should immediately be notified, and should coöperate with the physician to keep the disease from spreading. Children and parents from other houses should be warned; and, if they needlessly and obstinately persist in coming, they should be driven away.

Neither the nurse nor any other person should eat or drink anything in the sick-room, or anything which has been there. Food which the patient has left should be burned.

Cats and dogs should be kept from the sick-chamber, or better, out of the house, for their fur can easily carry the infection. These animals, as well as some others, sometimes have diphtheria, and communicate it to children.

The dishes which the patient uses should not be used by others, or washed with other dishes; they should be washed by themselves in boiling-hot water.

The utmost care must be taken that the discharges from the mouth, throat and nose do not soil the room or its furnishings; these discharges should be received on pieces of cloth, and then burned. If this cannot be done, they should be thoroughly disinfected with Solution C (four ounces to a gallon of water), or Solution E, followed by boiling. The discharges from the kidneys and bowels should be liberally treated with Solution A, Solution B, or Solution C, and not poured into the privy-vault, but buried, if possible, 200 feet or more from dwelling-houses and water-supply.

The bed-clothing and body-clothing should not be mixed with the family wash, but should be put into a tubful of Solution C, or Solution E, until ready to boil.

No person from a house where diphtheria is should go into public assemblies, such as schools, churches, or concerts.

Persons who have had diphtheria should not mingle with the public for some time after the last trace of the disease has left the throat and nose, and then not until they, and all their clothing, have been thoroughly washed and disinfected.

In case of death, the body should be inclosed in a sheet thoroughly wet in Solution A, Solution C (eight ounces to the gallon of water), or Solution E, and put into a tight coffin, which should not afterwards be opened. The funeral should be strictly private, and in no case should children be permitted to be present.

When the room is vacated after recovery or death, disinfect it by using the sulphur fumigation; then wash all surfaces with Solution A, Solution B, one-half strength, or with Solution C (four ounces to one gallon of water), and afterwards with soap and hot water; finally, throw open the doors and windows and ventilate thoroughly.

DISINFECTANTS.

Solution A—For excreta, privy-vaults, wood-work, and surfaces.

Solution B—For excreta, privy-vaults.

Solution C—For clothing, the hands, excreta, vaults, furniture, and wood-work.

Solution D—For the person, the hands.

Solution E—For clothing, the hands, the person, excreta.

Boiling—for clothing. *Sulphur fumigation*—for use only where liquid disinfectants cannot be used, or to supplement other methods.

Solution A.

Chloride of lime.....	6 ounces.
Water.....	1 gallon.

Mix. Cost, about three cents, or seventy-five cents a barrel. This is about a three-per-cent. solution. (Decolorizes and destroys fabrics.)

Solution B—"Purple Solution."

Corrosive sublimate.....	2 drachms.
Permanganate of potash.....	2 drachms.
Water.....	1 gallon.

Mix and dissolve. Label "*Poison!*" Cost, two or three cents a gallon, when the chemicals are bought by the pound. (Stains fabrics, etc.)

The permanganate of potassium in this solution is used to give it color, as a precaution against mistakes. It also in this quantity increases the deodorizing qualities of the solution. This is approximately a 1:500 solution of the sublimate; therefore, mixed with an equal quantity of water or liquids to be disinfected, it gives us a 1:1000 mixture. One ounce of this solution contains very nearly one grain of the corrosive sublimate.

Solution C—"Blue Solution."

Corrosive sublimate.....	4 ounces.
Sulphate of copper.....	1 pound.
Water.....	1 gallon.

Mix and dissolve. Label, "*Poison!*"

This is sixteen times stronger than Solution B, and is intended as a standard solution from which, by dilution with water, a solution of the proper strength for use may be made. To make it a solution of the proportion of—

- 1:500, add 8 oz. to one gallon of water.
- 1:1000, add 4 oz. to one gallon of water.
- 1:2000, add 2 oz. to one gallon of water.

Solution D.

Labarraque's Solution.....	1 pint.
Water.....	1 gallon.

Mix. Cost, about twenty-five cents.

Solution E.

Carbolic acid (90 per cent.).....	7 ounces.
Water.....	1 gallon.

Mix. This is approximately a five-per-cent. solution, or in the proportion of 1:21.

Sulphur Fumigation.—To use this effectively, three pounds of sulphur should be burned in a room ten feet square. Every opening into the room, flues, doors, windows, cracks and crevices, must be closed except the door by which the disinfectant is to escape. The sulphur is to be burned in an iron kettle, or other vessel, set in a tub containing a little water, to guard against fire. Ignite the sulphur with a few live coals, or with a little alcohol, or kerosene and a match. Leave the room quickly, for the fumes are highly poisonous when breathed, and close the door tightly. Let the room remain closed twenty-four hours or more. Then air thoroughly for several days.

Boiling for at least half an hour is a sure way to destroy infection. Immersion in Solution C, one part to two or three of water, or in Solution E, one-half strength, will lessen the danger from infected clothing until it can be boiled.

TYPHOID FEVER: ITS PREVENTION AND RESTRICTION.

Typhoid fever, sometimes called "*enteric fever*," "*fall fever*," etc., is a common disease of frequent occurrence in our State. It is especially a disease of young adult life, although no age is exempt from it. It attacks all classes of society, being found both in the mansion and the hovel. It is probably the most *preventable* of all infectious diseases—excepting, perhaps, small-pox since the introduction of general vaccination. In view of this fact, and that it is the cause of so much sickness and death in the State, it is hoped the following information will be carefully considered and followed by all who may receive this document.

There is a pretty strong conviction in the minds of sanitarians and physicians that typhoid fever is a disease which has but little right to exist in a civilized community. Such thoughts regarding things inevitable and necessary are neither reverential nor profitable; but intelligently-directed efforts to diminish the prevalence of typhoid fever have been followed by so large a measure of success that we are justified in regarding it as one of the *unnecessary* diseases.

The prevention of typhoid fever must rest very intimately on a knowledge of its cause, or at least on an acquaintance with the known laws in accordance with which the cause operates. The essential cause of disease is generally believed to be a minute germ, which is given off by the sick, and may be transmitted to the well in several ways.

The poisonous germ is not thrown off through the breath, or in the exhalations from the skin, as is the case in some other infectious diseases; but in this disease it is contained in the discharges from the bowels, and possibly also that from the kidneys. *Hence the proper disposal of the excreta is a matter of the first and highest importance.*

Another conclusion which is generally accepted is that the disease-germ, as it leaves the body, is not yet in a condition to be dangerous, but that in a short time, through a fermentative process, it acquires a dangerous character. *Therefore the need of the disposal of all discharges from the patient without delay.*

Still another thing which experience seems to teach, and which the public should bear in mind, is that this fever-germ may be not only developed but multiplied outside the human body. That the fever patient is in some way a factory for the time, being engaged in producing and throwing off a poison dangerous to other persons, is a matter of common belief; but of late years there has come a settled conviction

that this poison, or disease-germ, as we now call it, may be, and very often is, developed and multiplied to a dangerous extent outside of the human body, when it is once introduced into places which present the favoring conditions of moisture, warmth and filth. *Hence the vital necessity of care not to plant the dangerous seed in soil congenial to it.* Such dangerous localities about our homes are ill-kept water-closets, privies, cesspools, drains, and earth which is saturated with uncleanness.

In some instances the disease is so mild that the patient never goes to bed, and may be even unaware of the nature of his malady. His discharges, however, are fully as dangerous as in more serious cases, and unless properly cared for may be the cause of many other cases of the disease.

It is not believed that *filth* of itself will cause the disease, but it serves as a *nidus* (nest) in which the specific germ of the disease lodges, lives and multiplies. Typhoid fever is *communicable*, but it is *not* considered contagious.

The poison of typhoid fever may sometimes be received into the system by breathing it in; but, in undoubtedly the great majority of cases, the disease-germ finds its way into the intestinal canal by means of the food and drink. Reflection will show and experience teaches that there are many ways in which our food and drink may become contaminated with germs. Some of the more frequent ways are these: The discharges are thrown into the privy, or upon the ground, whence they soak, sometimes long distances, through the soil into the family well. The soiled clothes of the patient are washed, and the water carried by a loose and leaky drain which runs too near the well. Some kinds of food and drink are very absorptive of disease-germs, and being kept too near the patient, become contaminated through the air. Many cases are known where milkmen, with fever at their *own* homes, have caused serious outbreaks of the disease among their customers, by keeping the milk, before it was distributed, too near the sick, by diluting it with contaminated water, or even rinsing the cans with impure water.

Every intelligent citizen should feel that he has himself to blame if a case of typhoid fever occurs in his family, because in the way pointed out he can usually prevent it. If heads of families will protect themselves by creating a public opinion sufficient to compel local boards of health to use their abundant legal powers to protect the communities for which they exist, typhoid fever can never become epidemic, and isolated cases will be guarded and cared for, as are the victims of small-pox. In this way typhoid fever has been "crushed out," and can be again.

Sustain and encourage your local health officer. The management of an epidemic of this, as of other infectious diseases, requires an active, intelligent and fearless local board of health. The physician who is health officer of such a board should be, in fact as in name, their *executive* officer; and should feel, as very few now do feel, that in the performance of his plain duty he will be heartily supported by his board and the people whose representative he is. He has a claim on the medical profession rather for advice and encouragement than for carping criticism, as he is, in fact, their representative in public sanitary work.

PREVENTION.

What has already been said about the development of the typhoid-fever germ and the ways it is taken into the system, pretty plainly indicates the line of our endeavor in preventing it.

It is to be borne in mind—

1st. That filth, if it is not the direct cause, is at least the *nidus* (nest) in which the cause, or germ, may be developed.

2d. That the poison is principally given off from the bowels.

3d. That it is usually received into the system in the food and drink.

1. At all times, as well in the absence as during the presence of typhoid fever, let us try to keep our premises and their surroundings as pure and clean as possible. Of all forms of filth, none other are so dangerous to our homes as that of the "hole-in-ground" privy, and that in and about our sink-drains. The former should never be tolerated, nor the latter, either, in its usual forms. Filth in its sanitary signification includes not only the grosser forms, but also the less tangible and more *respectable* kinds which are too often ignored. The impalpable but not inodorous kind in the air of unventilated bedrooms, is disgusting and dangerous; the sewer-air which leaks from faulty water-closets or defective drain-pipes in the homes of the wealthy, consigns many to the tomb; the emanations from rotting chips or sawdust, the exhalations from decaying vegetables in the cellar—all these may dangerously pollute the air, and should be avoided.

2. All discharges from the fever patient should be received in a vessel containing a pint or more of Solution A, Solution B, or Solution C, and kept covered by the disinfectant three or four hours, and then buried in the earth where they cannot by any possibility find their way into wells, springs, or brooks. *They should never be allowed to mingle with any kind of filth, in a privy or elsewhere.* The clothing, both of bed and patient, should be disinfected by dropping it into a tub containing several gallons of Solution C, or Solution E, and should be kept therein until it can be boiled. After death or recovery, disinfect the room with sulphur fumigation, followed with washing the floors and other wood-work with Solution A, Solution C, or Solution E.

3. As far as concerns the personal hygiene of nurses and attendants it may be said, that if the foregoing preventive measures are carefully carried out, there is hardly a possibility of their taking the disease; in fact, under such conditions, cases in which the attendants have taken the disease from the patient are almost if not quite unknown. Typhoid fever goes through families because all have been exposed to the disease-producing cause; or the first cases contaminate the water supply, or "seed down" the privy vault and the house-surroundings with the disease-germs.

Nurses and others in the family should eat nothing in the room where the patient is, nor anything which has been there. The food for the attendants and family should be prepared and kept as far from the sick as possible. Thorough boiling will kill all disease-germs: so, while the fever is in the house, it is safer to boil all water and milk just before it is used.

DISINFECTANTS.

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Solution B—For excreta, privy-vaults.

Solution C—For clothing, the hands, excreta, vaults, furniture, and wood-work.

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Boiling—for clothing. *Sulphur fumigation*—for use only where liquid disinfectants cannot be used or to supplement other methods.

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Chloride of lime.....	6 ounces.
Water.....	1 gallon.

Mix. Cost, about three cents, or seventy-five cents a barrel; this is about a three-per-cent. solution. (Decolorizes and destroys fabrics.)

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Corrosive sublimate.....	2 drachms.
Permanganate of potash.....	2 drachms.
Water.....	1 gallon.

Mix and dissolve. Label, "*Poison!*" Cost, two or three cents a gallon, when the chemicals are bought by the pound. (Stains fabrics, etc.)

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Boiling for at least half an hour is a sure way to destroy infection. Immersion in Solution C, one part to two or three of water, or in Solution E, one-half strength, will lessen the danger from infected clothing until it can be boiled.

Two thousand programs of the Third Annual State Sanitary Convention, held at Emporia, December 5th and 6th, 1888, were issued, fifteen hundred of which were distributed throughout Kansas and other States, and five hundred retained for the use of the convention. (Samples of these were sent to each member of the Board.) The following is the program of exercises at the convention:

First Session—Wednesday, December 5, at 7:30 P. M.

1. Convention called to order by the President.
2. Invocation.—By Rev. J. F. Sauerber.
3. Address of welcome.—By Pres. J. F. Hendy, D. D., of Emporia.
4. Response.—By Hon. John K. Wright, of Junction City, President of the Convention.

5. Statement of the object of the Convention.—By G. H. T. Johnson, M. D., of Atchison, President of the State Board of Health.

6. Diffusion of Poisonous Gases.—By T. H. Dinsmore, Ph. D., of Emporia.

7. The Pollution of Drinking-Water.—By W. D. Bidwell, M. D., of Leavenworth, Secretary of City Board of Health.

8. Water Supply of the City of Emporia.—By Prof. W. C. Stevens, of Emporia.

9. Longevity.—By G. H. T. Johnson, M. D., of Atchison, President of the State Board of Health.

Second Session—Thursday, December 6, at 9 A. M.

1. Adulteration of Food and Drinks.—By D. Surber, M. D., of Perry, member of the State Board of Health.

2. Vehicles of Disease.—By Robert King, M. D., of Emporia.

3. Proper Drainage as a Necessity to Health.—By J. F. Lewis, M. D., of Howard, member of the State Board of Health.

4. Personal Hygiene.—By D. H. Painter, M. D., of Council Grove, County Health Officer.

5. Some Matters Hygienic—and Otherwise.—By J. Milton Welch, M. D., of Wichita, member of the State Board of Health.

6. Adulteration of Drugs, and Dangerous Proprietary Medicines.—By Hon. H. W. Spangler, of Perry.

Third Session—Thursday, December 6, at 2 P. M.

1. Diphtheria; Its Prevention and Cure.—By D. C. Jones, M. D., of Topeka, member of the State Board of Health.

2. Drainage and Sewerage in Emporia.—By L. D. Jacobs, M. D., of Emporia.

3. What Shall We Do?—By J. W. Jenney, M. D., of Salina, member of the State Board of Health.

4. Milk as a Cause of Disease.—By W. A. Williamson, M. D., of Topeka, County Health Officer.

5. State and County Health Boards; their Mission.—By H. S. Roberts, M. D., of Manhattan, member of the State Board of Health.

6. Ice and Milk Supply of the City of Emporia.—By Charles Gardner, M. D., of Emporia.

7. The Disposal of Sewage.—By W. L. Schenck, M. D., of Osage City, member of the State Board of Health.

Fourth Session—Thursday, December 6, at 2:30 P. M.

1. The Divinity of Sanitation.—By Gen. H. K. McConnell, of Osage City.

2. The Health of the People is the Supreme Law.—By J. W. Redden, of Topeka, Secretary of State Board of Health.

8. Physical Conditions Necessary to Successful Mental Work in our Schools.—By Mrs. F. M. Jackson, M. D., of Emporia.

4. Why Not?—By C. H. Guibor, M. D., of Beloit, member of the State Board of Health.

5. Limitations of Sanitation Laws.—By Hon. L. B. Kellogg, of Emporia.

6. Reports of Committees, Resolutions, and Miscellaneous Business.

7. Remarks by the Officers and visitors of the Convention.

Circular letters and blanks for replies were sent to each county health officer, in reference to the time of service, amount of labor performed, interest shown by the county commissioners, aid rendered by the people, sanitary condition of the county (past and present), and annual salary received.

(Samples of these circulars and blanks were furnished each member of the Board.)

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }
TOPEKA, KANSAS, Oct. 26, 1888. }

DEAR DOCTOR: I am frequently written to by county health officers for information in reference to the amount of labor performed, duties required, and annual salary received by the county health officers in the State. In order to answer all such inquiries accurately, fully and satisfactorily, I have issued and sent the inclosed circular to every county health officer. Hoping they may answer all the questions plainly and freely, and that it may result in benefiting all sanitarians and the sanitary work in this State, I am, Yours truly, J. W. REDDEN,

Secretary and Executive Officer.

—, KANSAS, November —, 1888.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR SIR: I am County Health Officer of — county, and have been for — years. The sanitary work requires of me — days' labor in each year. The County Commissioners are — interested in the work, and — give me their aid and support. The sanitary condition in the county is —, and is — improved. The people in general — appreciate and indorse our work. I receive — dollars per annum as County Health Officer. Yours truly, —, M. D., *County Health Officer.*

The circulars have been issued a month, and I have received replies up to this time from thirty-six county health officers, as follows:

GARNETT, KANSAS, November 1, 1888.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR SIR: I am County Health Officer of Anderson county, and have been for four months. The sanitary work requires of me to go anywhere in the county when it is necessary. The County Commissioners are interested in the work, and give me their aid and support. The sanitary condition in the county is good, and is much improved. The people in general appreciate and indorse our work. I receive \$50 for four months as County Health Officer. The sanitary condition of the county could be maintained better if the health officer was appointed for a longer period.

Yours truly, D. C. VAN STAVERN, *County Health Officer.*

MEDICINE LODGE, KANSAS, November 1, 1888.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR SIR: I am County Health Officer of Barber county, and have been for one year. The County Commissioners are not much interested in the work. The sanitary condition of the county is good. The people in general do not appreciate and indorse our work. I receive no salary as County Health Officer.

Yours truly, L. B. GILLETTE, M. D., *County Health Officer.*

HIAWATHA, KANSAS, November 16, 1888.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR SIR: I am County Health Officer of Brown county, and have been for three years. Cannot state the number of days' labor required of me in each year. The County Commissioners are fairly interested in the work. The sanitary condition in the county is good. The people in general appreciate and indorse our work. I receive forty dollars per annum as County Health Officer. Yours truly,

W. W. NYE, M. D., *County Health Officer.*

FRANCIS, KAS., November 1, 1888.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR SIR: I am County Health Officer of Cheyenne county, and have been for one and one-half years. The

sanitary work requires of me twenty-five days' labor. The County Commissioners are interested in the work, and they give me their aid and support. The sanitary condition is good. The people in general appreciate and indorse our work. I receive fifty dollars per annum as County Health Officer.

Yours truly, E. L. WATERMAN, M. D., *County Health Officer.*

CLAY CENTER, KAS., November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Clay county, and have been for three years. The County Commissioners are interested in the work, and give me their aid and support. The sanitary condition in the county is good, and is somewhat improved. The people in general appreciate and indorse our work. I receive thirty-six dollars per annum as County Health Officer.

Yours truly,

SAMUEL E. REYNOLDS, M. D., *County Health Officer.*

CONCORDIA, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Cloud county, and have been since December, 1885. It is impossible for me to give the number of days' labor in each year; my time is so put in by periods that I cannot even approximate it. The County Commissioners are not much interested in the work, and do not give me their aid and support. The sanitary condition in the county is fair, and is somewhat improved. The people in general do not appreciate and indorse our work. I receive one hundred dollars per annum as County Health Officer.

Yours truly,

L. D. HALL, M. D., *County Health Officer.*

BURLINGTON, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Coffey county, and have been for three years. The County Commissioners are not interested in the work, and do not give me their aid and support. The sanitary condition in the county is fair, and is not much improved. The people in general do not appreciate and indorse our work.

Yours truly, WM. MANSON, M. D., *County Health Officer.*

GIRARD, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Crawford county, and have been for two years. The County Commissioners are interested in the work, and they give me their aid and support. The sanitary condition in the county is fair, and much improved. I receive one hundred dollars per annum as County Health Officer.

Yours truly,

GEO. W. MILLER, M. D., *County Health Officer.*

JUNCTION CITY, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Davis county, and have been for three years. The sanitary work requires of me probably ten days' labor in each year. The sanitary condition in the county is good. I receive one hundred dollars per annum as County Health Officer.

Yours truly,

P. DOUGHERTY, M. D., *County Health Officer.*

OBERLIN, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Decatur county, and have been for nearly three years. The sanitary work requires of me about sixty days' labor in each year. The sanitary condition of the county is good, and is being improved. I receive two hundred dollars per annum as County Health Officer.

Yours truly,

A. W. BARITEAU, M. D., *County Health Officer.*

GRENOLA, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Elk county, and have been for about two years. The sanitary work requires of me about twenty days' labor in each year. The County Commissioners are poorly interested in the work, and reluctantly give me their aid and support. The sanitary condition in the county is fair, and is somewhat improved. The people in general do not appreciate and indorse our work. I receive one hundred dollars per annum as County Health Officer.

Yours truly, R. C. MUSGRAVE, M. D., *County Health Officer.*

EUREKA, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Greenwood county, and have been since the law went into force. The sanitary work requires of me twenty-four days' labor in each year. The County Commissioners are very much interested in the work, and they give me their aid and support. The sanitary condition in the county is good, and is much improved. The people in general do appreciate and indorse our work. I receive ninety-six dollars per annum as County Health Officer.

Yours truly, F. W. WATSON, M. D., *County Health Officer.*

NEWTON, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Harvey county, and have been for eighteen months. The sanitary work requires of me twenty days' labor in each year. The County Commissioners are much interested in the work, and give me their aid and support. The sanitary condition in the county is very good, and is somewhat improved. The people in general seem to appreciate and indorse our work. I receive two hundred dollars per annum as County Health Officer.

Yours truly,

MAX MILLER, M. D., *County Health Officer.*

JETMORE, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Hodgeman county, and have been for three and one-half years. The sanitary work requires of me but a few days' labor in each year; it is hard to estimate a few hours at a time. The County Commissioners are moderately interested in the work, and give me their aid and support. The sanitary condition in the county is good. I receive forty dollars per annum as County Health Officer.

Yours truly, M. F. ROLENS, M. D., *County Health Officer.*

OLATHE, KANSAS, November 12, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Johnson county, and have been for six months. The County Commissioners are not much interested in the work, and do not give me their aid and support. The sanitary condition in the county is medium, and is in a measure improved. The people in general, so far as posted, appreciate and indorse our work. There is no stipulated salary; my predecessors received about thirty-five dollars per annum as County Health Officers.

Yours truly,

C. G. MCKINLEY, M. D., *County Health Officer.*

DIGHTON, KANSAS, November 10, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Lane county, and have been for forty days. The sanitary condition in the county is good. Have had the office too short a time to be able to make a complete report. Don't know, as yet, what compensation I will receive.

Yours truly, F. L. ROWND, M. D., *County Health Officer.*

OSWEGO, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Labette county, and have been for three years. The sanitary work requires of me about fifteen days' labor in each year. The sanitary condition in the county is fair, and is being improved. I receive one hundred dollars per annum as County Health Officer.

Yours truly,

E. E. LIGGETT, M. D., *County Health Officer.*

MOUND CITY, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Linn county, and have been for three years. The County Commissioners are somewhat interested in the work. The sanitary condition in the county is good. The people in general do not appreciate and indorse our work. I receive one hundred dollars per annum as County Health Officer.

Yours truly, IRA E. COE, M. D., *County Health Officer.*

EMPORIA, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Lyon county, and have been for one year and nine months. The sanitary work requires of me thirty or forty days' labor in each year. On account of pressure of business, I hire the most of the writing, so far as the ledger is concerned. The returns can be recorded by any book-keeper. I do all except that, and even the most of that. The County Commissioners are reasonably interested in the work, and as much as they can, give me their aid and support. The sanitary condition in the county is good, and is or has improved. The people in general, if personally benefited, appreciate and indorse our work. I receive one hundred dollars per annum as County Health Officer. The city has a board of health. Dr. Sherbourne is its medical adviser. Yours truly

R. W. McCANDLESS, *County Health Officer.*

PEABODY, KANSAS, November 19, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Marion county, and have been for about nine months. The sanitary work requires of me fifteen to twenty days' labor in each year. The sanitary condition in the county is fair, and is somewhat improved. The people in general appreciate and indorse our work. I receive postage and stationery per annum as County Health Officer for the use of the office.

Yours truly, C. A. LOOSE, M. D., *County Health Officer.*

FRANKFORT, KANSAS, November 8, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Marshall county, and have been for over two years. The sanitary work requires of me forty to forty-five days' labor in each year. The County Commissioners are fully interested in the work, and willingly give me their aid and support. The sanitary condition in the county is good, and is being improved. The people in general accept, appreciate and indorse our work. I receive three dollars per day as County Health Officer when on duty.

Yours truly, W. H. CLUTTER, M. D., *County Health Officer.*

FONTANA, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer for Miami county, and have been for two years (the 1st of January, 1889). The sanitary condition in the county is good. I receive \$90.74, counting

the last quarter of 1887 with the first three quarters of 1888, or three dollars per day for services, and pay my own traveling expenses.

Yours truly,

G. W. ROBINSON, M. D., *County Health Officer.*

ELK CITY, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Montgomery county, and have been for about ten months. The sanitary work requires of me about thirty-five days' labor in each year, when no severe epidemic exists. The County Commissioners are much interested in the work, and willingly give me their aid and support. The sanitary condition in the county is good, and is, I think, somewhat improved. The people in general, I think, appreciate and indorse our work. I receive two hundred dollars per annum as County Health Officer. Yours truly,

JOHN T. DAVIS, M. D., *County Health Officer.*

OSBORNE, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Osborne county, and have been for one and one-half years. The sanitary work requires of me about twenty-five days' labor in each year. The sanitary condition in the county is good. I receive about two hundred dollars per annum as County Health Officer. The above is as nearly as I can answer these questions. The number of days I can only approximate, as I have kept no account of time. The amount received is also only an approximation, and is regulated as follows: 25 cents each for recording and filing birth, death, marriage and still-birth reports; \$5 for sanitary inspection and quarantining in city, and \$10 in country or neighboring towns. Any further inquiries will be gladly answered.

Yours truly,

B. F. CHICOTT, M. D., *County Health Officer.*

RICHFIELD, KANSAS, November 28, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Morton county, and have been for one and one-half years. The sanitary work requires of me twenty to thirty days' labor in each year. The County Commissioners are interested in the work. The sanitary condition in the county is good. I receive one hundred dollars per annum as County Health Officer, which includes my professional services to such of the poor in the county as are unable to employ a physician.

Yours truly,

L. C. BOWERS, M. D., *County Health Officer.*

LARNED, KANSAS, November 6, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Pawnee county, and have been for three years. The sanitary work requires of me several days' labor in each year. The County Commissioners are not interested in the work, and do not give me their aid and support. The sanitary condition in the county is good. The people in general do not appreciate and indorse our work. I receive fifty dollars per annum as County Health Officer.

Yours truly, J. MATHIOT CUMMINS, M. D., *County Health Officer.*

MARVIN, KANSAS, November 19, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Phillips county, and have been for three years. The sanitary work requires of me about twenty-five days' labor in each year. The County Commissioners are fairly interested in the work. The sanitary condition in the county is good, and is much improved. I receive one hundred dollars per annum as County Health Officer. Yours truly,

ISAIAH MILEY, M. D., *County Health Officer.*

WESTMORELAND, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Pottawatomie county, and have been for three years. The sanitary work requires of me about fifteen days' labor in each year. The County Commissioners are much interested in the work, and they give me their aid and support. The sanitary condition in the county is fair, and is improving. I receive about one hundred and twenty-five dollars per annum as County Health Officer. I am paid by the County Commissioners five cents for filing and five cents for recording marriages, births, etc., and three dollars per day for other work done by me.

Yours truly,

C. A. SKENE, M. D., *County Health Officer.*

LUDELL, KANSAS, November 6, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Rawlins county, and have been for three years. The sanitary work requires of me fifteen days' labor in each year. The sanitary condition in the county is good. I receive sixty dollars per annum as County Health Officer.

Yours truly,

J. L. CONSTABLE, M. D., *County Health Officer.*

LA CROSSE, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Rush county, and have been ever since the law was enacted. The sanitary work requires of me five days' labor in each year. The County Commissioners are interested in the work, and have given me their aid and support. The sanitary condition in the county is good. I have received six dollars, all told, from first to last, as County Health Officer. I have not charged for labor, as we thought the expenses would tend to create opposition to the law and to the Board. We thought to do gratuitous service until the people learned to appreciate the Board and health laws. Yours truly,

W. M. GOODWIN, M. D., *County Health Officer.*

RUSSELL, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Russell county, and have been for two years. The sanitary work requires of me about thirty days' labor in each year. The County Commissioners are interested in the work, and they give me their aid and support. The sanitary condition in the county is good. The people in general appreciate and indorse our work. I receive one hundred dollars per annum as County Health Officer.

Yours truly,

J. W. LONG, M. D., *County Health Officer.*

NORTH TOPEKA, KANSAS, November 15, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Shawnee county, and have been for one year. The sanitary work requires of me forty-five days' labor in each year. The sanitary condition in the county is fair, and is being improved. The people in general only moderately appreciate and indorse our work. I receive three hundred dollars per annum as County Health Officer.

Yours truly,

W. A. WILLIAMSON, M. D., *County Health Officer.*

HOXIE, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Sheridan county, and have been for four years, or ever since it has been in existence. The sanitary work requires of me one hundred days' labor in each year. Two County Commissioners are not interested in the work; they live in a remote part of the county, and think it unnecessary, and they do not give me

their aid and support. The sanitary condition of the county is good, and has improved. I receive eighty dollars per annum as County Health Officer.

Yours truly,

D. M. FREEMAN, M. D., *County Health Officer.*

GOODLAND, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Sherman county, and have been for two years. The sanitary work requires of me twenty to thirty days' labor in each year. The County Commissioners are interested in the work, and give me their aid and support. The sanitary condition in the county is good. The people in general appreciate and indorse our work. I receive two hundred dollars per annum as County Health Officer.

Yours truly,

M. A. RUSH, M. D., *County Health Officer.*

WELLINGTON, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Sumner county, and have been for two and one-half years. The County Commissioners are not interested in the work, and do not give me their aid and support. The sanitary condition in the county is good. The people in general do not appreciate and indorse our work. There has been but little done here in enforcing the health laws; the physicians fail to register or report cases. Of course when an epidemic occurs, it is reported. The County Commissioners are simply careless, as I have been myself. I have really done so little that I have never presented a bill for my services, except for special service in the small-pox cases last winter. We have been free this year from any epidemic or contagious diseases.

Yours truly,

W. O. BARNETT, M. D., *County Health Officer.*

COLBY, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Thomas county, and have been for one year. The sanitary work requires of me about twenty days' labor in each year. The County Commissioners are somewhat interested in the work, and are disposed to give me their aid and support. The sanitary condition in the county is fair, and in Colby could be improved. The people in general neither appreciate nor indorse our work. I received twenty-five dollars this year as salary for County Health Officer, and thirty-one dollars for transcribing records of births, deaths, etc.

Yours truly,

V. C. EDDY, M. D., *County Health Officer.*

FREDONIA, KANSAS, November 1, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I am County Health Officer of Wilson county, and have been for three years. The sanitary condition in the county is good. The people in general pay little attention to our work. Since the first year, the sanitary work done or attempted has been very little. What has been done has been advisory, not peremptory. I receive two hundred dollars per annum as County Health Officer.

Yours truly,

F. M. WILEY, M. D., *County Health Officer.*

Under the interstate notification of dangerous communicable diseases, I have received the following official communications since our last session:

The Illinois State Board of Health, under date of September 21st, reports: "One mild case of small-pox at Rock Island." Under date of October 11th: "Twelve cases of varioloid and 4 of small-pox in Belleville, St. Clair county; disease supposed to have been contracted by children herding cattle near small-pox hospital, or by the theft of grapes from orchard

near same. First cases very mild, and no physician called to see them. All necessary precautions taken." Under date of October 17th: "Six more cases of small-pox taken at Belleville;" October 22d, "five new cases of small-pox at Belleville."

Iowa State Board of Health, under date of October 11th, reports: "Two cases of small-pox at Spencer, in Clay county; the origin of the disease is importation from Norway."

Michigan State Board of Health reports under date of November 13th: "One case of small-pox at Port Huron, St. Claire county; the person sick is captain of one of the ferry boats." November 30th: "One case of small-pox at Lausling, Ingham county; the patient returned from Detroit last week, and had been at other points. Patient isolated on third floor of brick building on the main avenue of the city; at least one person was exposed before the disease was recognized." December 1st: "One case of small-pox at New Haven, Shiawassee county, and one at Howell, Livingston county. The person sick in New Haven is a child who recently visited near Detroit; the one at Howell associated with a traveling-man; disease was perhaps contracted on the cars in which Mrs. Poquette went from Sarnia, Ontario, to East Saginaw, Michigan. Patients isolated and people vaccinated. In each place persons were exposed before the disease was recognized as small-pox."

Minnesota State Board of Health reports, September 17th: "A case of small-pox at Wangath, Renville county; woman 45 years old, came from Quebec; all exposed persons isolated, and vaccination enforced." September 27th: "Two more cases of small-pox at same place; exposure to same case and in same family; isolation and vaccination enforced."

The Pennsylvania State Board of Health, under dates of September 18th, 19th, 23d, October 24th and November 7th, reports: "Ten cases of small-pox at Philadelphia; isolation and disinfection enforced." And under date of November 10th, reports: "One case of small-pox at Munhall, in Allegheny county; a Hungarian emigrant; origin being importation from Europe; isolation and disinfection enforced."

The Montreal Board of Health, under dates of October 22d and November 3d, reports: "Six cases of small-pox at Granby, county of Shefford; origin of disease, infected clothes from Springfield, Mass. Patients isolated, house quarantined, and all exposed persons vaccinated."

The Toronto Board of Health reports, September 26th: "Five cases of small-pox at Toronto, county of York; disease originated at Buffalo, New York."

The following communications, from physicians in the northern and northwestern part of the State, are herewith submitted:

—, KANSAS, November 8, 1888.

J. W. Redden, M. D., Topeka, Kansas—MY DEAR SIR: We have *Scarlet Fever* here—two cases have *died* under the care of Dr. — the other by Dr. — all of this

place. How are we to establish quarantine over those rebellious cuses who still persist in running at large contrary to the *medical criticism*?

Respectfully yours, ————, M. D.

———, KANSAS, November 27, 1888.

J. W. Redden, M.D.—DEAR DOCTOR: In your kind letter of January 7th, 1888, you informed me that I can consider myself as a member of the State Sanitary Convention. I gladly would be present at the sessions of the next meeting at Emporia, but certain cases of diseases do not allow me to leave. Would you, dear Doctor, please lay the inclosed paper before that honorable body? Here, and probably elsewhere in the State, some farmers skin the bodies of cattle which die of this dreadful bovine disease, and then they sell the hides. Is there no remedy?

Very respectfully, your servant, ————, M. D.

MURRAIN.

———, KANSAS, November 24, 1888.

To the Kansas State Sanitary Convention: It is a criminal act of many persons to skin animals dying of murrain (bovine disease), and to sell the hides. The danger connected with it should be considered. Malignant pustule is the result of infection of men from the bodies of animals dying of this disease. It is confined to the sub-cutaneous tissue, and first appears as a painful pimple, which soon becomes a vesicle filled with turbid serum, followed by the characteristic pustule. This sloughs, leaving a gangrenous ulcer which may spread rapidly; at the same time the limb becomes enormously swollen. In those cases where the pustules are situated upon the face, the fancies may become involved, and death ensue from suffocation. In the severer form few recoveries take place.

Herman Kayser, a farmer living two miles south of P———, ——— county, Kansas, whilst handling the hairs of calves which doubtless died of murrain, got infected with this dreadful disease in the beginning of November, 1888. There was at one time very little hope of his recovery, but under proper treatment he finally got well. May this case be an earnest warning to cattle-owners not to skin, but to bury immediately the bodies of animals dying of this disease; and may the law be enforced making the sale of such hides a criminal offense.

DR. ———.

The following communications from the County Health Officers of McPherson and Graham counties are submitted, and are as follows:

MCPHERSON, KANSAS, November 19, 1888.

J. W. Redden, M.D., Topeka, Kas.—DEAR SIR: I regret that I am unable to make a complete report, owing to the negligence on the part of the physicians of the county in sending reports. One physician in the city and one or two in the country send their reports promptly. An examination of the records shows two hundred and seventy-four burial-case permits to thirty three physicians' certificates of deaths, during the year 1888. I have recorded two hundred and eighteen marriages, eighty-seven births, thirty-three deaths, and two hundred and seventy-four burial case permits, part of which was left by the preceding Health Officer. As shown by the burial-case permits, there have been since January 1, 1888, twelve deaths from diphtheria, two from typhoid fever, and one from scarlet fever. The sanitary condition of the county at present is good.

Respectfully, W. A. SHELTON, M.D.

MILLBROOK, KANSAS, November 7, 1888.

J. W. Redden, M.D., Secretary State Board of Health—DEAR DOCTOR: I received by this evening's mail pamphlets on typhoid fever, scarlet fever, and diphtheria. I shall be glad to carry out your instructions in regard to them.

Your circular letter of October 26th also received, relating to duties, salary, etc., of county health officers. After looking over the blank furnished, the condition of the county is such that I had best answer as the case demands. I have been County Health Officer since April 1st, 1888. I am allowed the munificent sum of \$50 per year, paid quarterly in county scrip worth 82 cents on the dollar, and hard to find buyers at that. I think, if occasion required, the County Commissioners would enter heartily into any recommendations which I would make; provided, however,

it did not conflict with preconceived notions of the healthfulness or purity of water at the county seat (Hill City). Last year typhoid fever raged there, and several deaths from the disease. I had no hesitation in saying the water was chiefly the cause. Several bottles from different wells, and from two wells from Millbrook, were sent by Hill-City people to the State Board for analysis. Until a few days ago I never knew the result of that analysis, when lo! the two bottles from Millbrook were labeled "poisonous." There has been considerable typhoid again there this fall, and several deaths. Last year there were only two light cases of that disease in Millbrook, and so far this year only three cases, and no deaths either year. You will understand the situation when I say that Hill City and Millbrook are cities of the third class, and rivals for the county seat. The 10th of March last the records were removed from Millbrook to Hill City. The result of the election on the 5th of November may reopen the conflict. As a whole, the people of the county appreciate the value of sanitary work. In a county as thinly populated as this, having no town larger than a population of 400, not much sanitary work is required.

I find it hard to impress upon people the importance of observing well-known facts in regard to the suppression of disease; and particularly in a new country, where there is a conglomeration of nationalities, ignorance, and sectional strife.

There have been quite a number of cases of typhoid fever in the county during the past few months; just how many I am unable to say. It started this year, as it did last, at Hill City; then isolated cases at distant points. While there have not been as many cases as last year, the disease has been more fatal. The same may be said of sickness in general. I cannot get physicians to make reports of the number of patients having the disease (typhoid), hence any weekly report I might be able to send would be of no value unless true.

The County Attorney has requested me to ask you for a certified copy of the rules and regulations that have been passed by the State Board of Health. I may have, shortly, to prosecute a physician for neglect or refusal to report births and deaths, in consequence of my failure to convict a physician on the same charges some time ago; of which failure I acquainted you with the facts.

J. Lon Ardery, M. D., has recently located at Hill City, but has not yet registered.

Very truly yours,

E. C. LOOMIS, M. D., *County Health Officer.*

The following communication and reply, in reference to the location of graveyards, is worthy of perusal:

VICTORIA, KANSAS, October 8, 1888.

State Board of Health, Topeka, Kansas—GENTLEMEN: Are there any limitations about graveyards, as to how near they can be to a town or village, in the statutes of Kansas? Please let me hear from you about this question.

Hoping to be favored with an answer, I remain,

Yours truly,

F. B. BRUNGARDT.

TOPEKA, KANSAS, October 9, 1888.

F. B. Brungardt, Esq., Victoria—DEAR SIR: Your letter of 8th received. I submitted the question contained in your letter to the Attorney General, who informs me there is no provision in the statutes of the State regulating the distance of graveyards from villages or cities; and that the distance and location of cemeteries or graveyards can only be regulated by the ordinances of cities or towns, where their charter grants them such right and authority.

Hoping that this information may be of service to you, I remain,

Yours truly,

J. W. REDDEN, *Secretary.*

The following report of diphtheria in an epidemic form, recently, at Perry, is submitted by D. Surber, M. D.:

DIPHTHERIA AT PERRY, JEFFERSON COUNTY.—(*By D. Surber, M. D., Perry.*)

In reference to the epidemic of diphtheria at Perry, Jefferson county, Kansas, I will state, there was an epidemic of sore throat, catarrhal in character, prevalent during the month of August, principally among children under fourteen years of age, which readily yielded to treatment. On September 2d occurred the first case (a boy four years of age) which showed dangerous malignant throat trouble. The first symptoms were a chill, followed by a hot fever, swelled glands, external, both sides; internal mucous membrane of mouth and throat, purple red, both tonsils swelled, right one coated with white patch; offensive breath; patient very restless. Gave local and constitutional treatment, but with no effect; the third day began to discharge from mouth and nose, bloody, fetid mucus; on the fifth day the disease reached the stomach and lungs; on the sixth, he died.

Second case: September 7th, a boy three years of age, in a distant part of town; no exposure to the first case, but had all the symptoms of the first case. On the third day the offensive discharge from mouth and nose developed; on the fourth day a hemorrhage from nose; all the symptoms grew worse, and he died on the 13th—six days after the attack.

On the third day after the first case, in this family, a second one, a boy five years of age, came down with the disease; and on the fourth day, a third case, a girl seven years of age—all of the worst form, discharging bloody mucus from mouth and nose. Father and mother had sore throats at this time. All convalesced nicely in about ten days. Sequela: After the five-year-old boy was up, and we thought well, he chilled at night, followed with fever; next morning he was bloated from head to foot, ceased to urinate, and died in five days, from blood poison.

The fifth and most violent case, a girl nine years of age, three miles in the country, was attacked September 19th, and died the 22d, after four days of illness.

These constitute the fatal cases of diphtheria up to date; other cases, milder in form, have occurred since.

On examination for local causes, I found that the premises of the first case could be attributed to a part open and a part underground drain from the kitchen, that had been filled up with garbage during the summer. The second family's premises revealed a cave, near the kitchen door, used for keeping vegetables, milk and butter for family use; this cave-cellar, during the wet part of summer, stood half-full of surface-water for a time. After soaking away, it was used as before, containing a bad atmosphere. Further examination revealed an over-filled privy; this was enough to contaminate the atmosphere for a quarter of a mile. The third family's premises revealed no special local cause, except an open well used for drinking and culinary purposes; it being situated on a slope three or four rods below the dwelling-house, where heavy rains would carry surface-water into the well, sufficient to contaminate the water. No other member of this family, containing nine, has shown any symptoms of the disease up to this date.

All preventive means were used. This is a brief statement of the above cases.

OCTOBER 1, 1888.

The following communication in reference to samples of water sent by the County Health Officers of Marion, Pottawatomie and Brown counties for examination, and the reports of the chemist and microscopist of the Board, are herewith submitted, and should be carefully examined and considered:

PEABODY, KANSAS, September 17, 1888.

J. W. Redden, M. D., Topeka, Kansas—DEAR DOCTOR: I have this day sent water to Dr. Reid Alexander, Topeka, as requested, for analysis; also gave him such information as I deemed necessary. I took every precaution to get perfectly clean samples, and the only error is that I had to use two half-gallon bottles in place of one, because I could not get one in Peabody or Walton, or even Marion Center. I hope it will prove satisfactory, and that we will receive the result of the analysis as soon as convenient. The injunction suit is placed for the 24th inst., but at this session they do not as yet need the analysis, unless if it was here, I might take it to the court to show the condition of the stream or water at present. I will write you again. The citizens will have to have more samples analyzed before the war is over.

Respectfully yours,

C. A. LOOSE, M. D.

C. A. Loose, M. D., County Health Officer, Peabody—DEAR DOCTOR: Inclosed please find a copy of the report of the chemist of the examination of the sample of water sent by you. Acknowledge receipt, and write me what the status of the sewer question from the public school is at this time; and what is the decision of your court in this matter?

Yours truly,

J. W. REDDEN, *Secretary.*

TOPEKA, KANSAS, September 25, 1888.

Dr. J. W. Redden, Secretary State Board of Health—DEAR DOCTOR: Inclosed please find report upon sample of water received from Peabody, Kansas.

Sample of water taken from Doyle creek, within the city limits of Peabody, Marion county, Kansas:

	<i>Grains per U. S. gallon.</i>
Organic matter .....	.420
Silica.....	.516
Alumina and oxide of iron.....	.674
Bicarbonate of lime.....	2.420
Bicarbonate of magnesia.....	6.481
Sulphate of lime.....	40.257
Sulphates of soda and potash.....	11.322
Chloride of soda.....	5.190
Total solids.....	67.280
Chlorine (combined).....	3.132
	<i>Parts per million.</i>
Free ammonia.....	.190
Albuminoid ammonia.....	.200

MICROSCOPIC EXAMINATION: { Infusoria.
Bacteria.

I would condemn this water for drinking purposes, for three reasons: first, the heavy amount of albuminoid ammonia present, showing bad drainage; second, the large per cent. of sulphate of lime; and third, the presence of bacteria.

REID ALEXANDER,

Chemist and Microscopist for the Kansas State Board of Health.

WESTMORELAND, KANSAS, September 21, 1888.

J. W. Redden, M. D.—DEAR DOCTOR: Within the past year, and up to the present time, in a population of less than four hundred, more than sixty cases of malarial fever have occurred, and are still occurring. I have thought best to send you for analysis two gallons of water, to see if it arose from any impurities contained in it. I have complied with circular No. 43 as nearly as possible.

Sample marked "Well No. 1" (see map of city) is from an open well, dug June, 1884, depth thirty-two and one-half feet, size six feet in diameter. In digging, they passed through the first four feet, top-soil and clay; next three feet, blue clay; next

three feet, limestone and geodes; next fifteen feet, blue limestone; next two and one-half feet, black sand, shale and clay mixed. Water rises about twenty-two inches, in good supply; well in street, and is public property. No cess-pools or drains near the well.

Well No. 2 (see map of city), drilled in 1886, is six inches in diameter; depth, 50 feet; first 5 feet top-soil and clay; next 45 feet blue limestone and shale. Depth of water in well, 30 feet. Iron pump in well, and is private property. About 50 feet south of the well stands a livery barn, but there are no cess-pools or drains near the well. From these wells is drawn most of the water that supplies Armer and Main streets, where almost *all* of the malarial fever has occurred. Strangers coming to our town, on first using the water, find that it acts as a laxative. The water used in my office has been from well No. 1. Respectfully yours, &c.,

C. A. SKENE, M. D., *County Health Officer.*

TOPEKA, KANSAS, September 27, 1888.

C. A. Skene, M. D., *County Health Officer, Westmoreland*—DEAR DOCTOR: Your letter of 21st received. The sample of water "No. 1" will be examined and analyzed by our State Chemist, and the report made to you in a few days.

Inclosed please find a circular letter in reference to the action of the State Board for the examination of water sent by county health officers and others, from which you will readily perceive that the State can only pay for the analysis and examination of one sample of water. Should you desire sample "No. 2" analyzed and examined, both chemically and microscopically, your city council or citizens will have to forward fifteen dollars, upon payment of which our chemist will make an analysis, and I will send you the report of same. Regret that our appropriation for such purpose is so limited that we cannot have both samples examined free of cost to your people.

Yours truly, J. W. REDDEN, *Secretary.*

TOPEKA, KANSAS, September 29, 1888.

Dr. J. W. Redden, *Secretary Kansas State Board of Health, Topeka, Kansas*—DEAR DOCTOR: Inclosed you will please find report upon sample of water received from Pottawatomie county, Kansas, marked "Well-water No. 1."

WELL-WATER NO. 1.—FROM POTTAWATOMIE COUNTY, KANSAS.		<i>Grains per U.S. gallon.</i>
Organic matter.....		.091
Silica.....		.212
Alumina and oxide of iron.....		.431
Bicarbonate of lime.....		5.729
Bicarbonate of magnesia.....		1.310
Sulphates, and bicarbonates of soda and potash		9.381
Chloride of soda.....		2.570
Total solids.....		19.724
Chlorine (combined)		1.548
		<i>Parts per million.</i>
Free ammonia.....		.1210
Albuminoid ammonia.....		.0450

MICROSCOPIC EXAMINATION: { Infusoria.
Algae (fresh-water).

This is a pure, healthful drinking-water, of good mineral and organic composition.

REID ALEXANDER, M. D.,

Chemist for the State Board of Health.

HIAWATHA, KANSAS, November 15, 1888.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR DOCTOR: I send you a sample of water from one of the wells used by the children attending one of our public schools. One of our physicians has a child sick with typhoid fever, and the

Doctor suspects the water, but so far as I know it is the only case among the children attending this school. Of course, if there is anything wrong with the water would like to know it, and I will bring the matter before the School Board; but thought it best to have it examined before saying anything about it, as I believe you will do so free of charge, as per previous circular. With best wishes.

I remain yours truly,

W. W. NYE, *County Health Officer.*

TOPEKA, KANSAS, November 17, 1888.

W. W. Nye, M.D., *Hiawatha*—DEAR DOCTOR: Your letter of 15th received. The sample of water sent by you will be analyzed free of cost to you, and a copy of the report sent to you as soon as the analysis is completed.

Yours truly,

J. W. REDDEN, *Secretary.*

TOPEKA, KANSAS, November 24, 1888.

W. W. Nye, M.D., *Hiawatha*—DEAR DOCTOR: Inclosed please find a copy of the report of the sample of water you sent to me for analysis, a few days since. This report of the Chemist and Microscopist of the State Board of Health shows that the water is impure, and should not be used for drinking purposes. Acknowledge receipt.

Yours truly,

J. W. REDDEN, *Secretary.*

TOPEKA, KANSAS, November 23, 1888.

Dr. J. W. Redden, *Secretary Kansas State Board of Health, Topeka, Kansas*—DEAR DOCTOR: The per cents of free and albuminoid ammonia in the sample of water left by you in my office on November 17, 1888, are as follows:

	<i>Parts per million.</i>
Free ammonia.....	.191
Albuminoid ammonia.....	.198

These per cents. of ammonia are sufficient to condemn it for drinking purposes.

MICROSCOPIC EXAMINATION: { Infusoria.
Algae (fresh-water).

REID ALEXANDER, M.D.,

Chemist for the State Board of Health.

I regret that it becomes necessary at this session to present to the Board the following letter from Dr. Roberts, stating that he has tendered his resignation to the Governor as a member of the State Board of Health. The following is the letter:

MANHATTAN, KANSAS, December 3, 1888.

J. W. Redden, M.D., *Secretary State Board of Health, Topeka, Kansas*—DEAR DOCTOR: I have this day forwarded to Gov. Martin my resignation as member of the State Board of Health. Please notify the Board, and have my place on committees filled. I had hoped to be with you at Emporia, but it is impossible.

With kind regards to you, and best wishes for the future of the Kansas State Board of Health, and asking you to give my regards to each member, I am

Very truly yours,

H. S. ROBERTS.

No doubt the Board, before adjournment, will take proper and suitable action in reference to the resignation of Dr. Roberts, who has always been attentive, active, social, manly, progressive, endearing himself by his manly deportment, integrity and nobility of character, laboring continually for the devotion of medical education, the promotion of public health, and the advancement of sanitary reform; and proving himself a true sanitarian.

Respectfully submitted.

J. W. REDDEN, *Secretary.*

REPORT OF EXECUTIVE COMMITTEE.

The following report is from the Executive Committee of the State Board, giving the result of their examination of the sanitary condition of the State Reform School, at Topeka:

To the Kansas State Board of Health: Your committee visited and examined the State Reform School September 12th, 1888. We were courteously received by the Superintendent, J. F. Buck, and by Dr. Hibben, Physician, who showed us through the buildings and over the grounds and gave us all possible information.

We learned that three years ago there had been a severe epidemic of an adynamic fever, over forty cases occurring at the institution, and that the same type of fever occurred last year and the year before, though less serious in form and extent, and we found about ten per cent. of the boys confined with a fever producing a temperature of 101, 102 and 103° F. in the morning, with an increase of one or two degrees during the afternoon, and typhoid in character. As vigorous boys of the age of those at the School should be free from disease, we sought its cause.

The water-closets in the dormitories connect with the sewers, and are intended to have a *downward draft*, but upon holding a lighted taper over them we found the draft *upward*, and that instead of carrying impurities out of the rooms they poisoned the air with emanations from the sewers. We think this can be remedied by increasing the height of the ventilating-shaft, which is scarcely higher than the windows of the upper rooms.

The sewage is emptied into Soldier creek, a small brook without perceptible current, that winds from an hundred yards north of the buildings westward to where it receives the sewage, which saturates its waters for an indefinite distance either way. The main well that furnishes the institution with its water supply is located twenty feet from this stream, with its bottom in a sandy alluvium only a few feet lower than the bed of the stream. If the inmates of a public institution were in nowise injured thereby, it has no more right to empty its sewage into a stream to be carried to those living along its banks, polluting the air they breathe and the water they drink, than a private citizen has to empty his filth in a neighbor's dooryard. The State, through its eleemosynary institutions, should be an educator in sanitary science as well as protector of the health and life of those under its care. Some other means should be found for the disposal of sewage, and the roofage of the buildings is sufficient to supply pure rain-water for drinking and culinary purposes.

Your committee directed the Chemist and Microscopist of the Board to make an analysis of the water in the wells, and his report is hereto appended.

The ventilation in all the buildings is defective. In the new dormitories there is provision for the egress of impure air, but none for the admission of fresh air, except through the windows and doors. In the old building *ground air* enters through the cellar, where it is warmed and distributed to the rooms, but no provision is made for the escape of impure air except through the doors and windows and small registers near the ceiling on the sides where the warm air enters, whose only purpose, if sufficiently large, would be to carry out the warm air as fast as it was admitted, leaving a body of cold and impure air throughout the rooms.

In the conditions above named your committee find sufficient reasons for the prevailing disease.

The rooms containing the sick are overcrowded. The institution should have a cheap frame hospital building, erected apart from the other buildings.

The building containing the air-shaft and engine is in a depression on the bank of Soldier creek, which at flood-time enters the building and extinguishes the fires. This can be cheaply and easily remedied by a short wall and fill, and these should be made before the time of freshets.

The grounds were adorned with beautiful flowers, and together with the buildings were kept in the best possible condition, and the boys were clean, well fed, and happy.

Respectfully,

W. L. SCHENCK, M. D., Chairman,
H. S. ROBERTS, M. D.,
J. MILTON WELCH, M. D.,
D. C. JONES, M. D.,
J. W. JENNEY, M. D.,

Committee.

TOPEKA, KANSAS, September 18, 1888.

Dr. J. W. Redden, Secretary Kansas State Board of Health—DEAR DOCTOR: Inclosed you will find reports upon waters Nos. 1 and 2 from State Reform School.

WATER NO. 1.—"FROM THE WELL NEAR THE BUILDINGS."		<i>Grains per U. S. gallon.</i>
Organic matter.....		.082
Silica.....		.187
Alumina and oxide of iron.....		.212
Bicarbonate of lime.....		5.430
Bicarbonate of magnesia.....		1.612
Sulphates, and bicarbonates of soda and potash.....		7.437
Chloride of soda.....		1.280
Total solids.....		16.240
Chlorine (combined).....		.773
		<i>Parts per million.</i>
Free ammonia.....		.180
Albuminoid ammonia.....		.030

MICROSCOPIC EXAMINATION: Infusoria.

This is a pure, healthful drinking-water, free from injurious contamination of any kind, as shown by the small amount of organic impurity.

WATER NO. 2.—"FROM THE WELL NEAR SOLDIER CREK."		<i>Grains per U. S. gallon.</i>
Organic matter.....		.087
Silica.....		.192
Alumina and oxide of iron.....		.217
Bicarbonate of lime.....		5.472
Bicarbonate of magnesia.....		1.614
Sulphates, and bicarbonates of soda and potash.....		7.941
Chloride of soda.....		1.282
Total solids.....		16.805
Chlorine (combined).....		.774
		<i>Parts per million.</i>
Free ammonia.....		.178
Albuminoid ammonia.....		.031

MICROSCOPIC EXAMINATION: Infusoria.

This is a pure drinking-water, of good mineral and organic composition, free from all evidence of contamination by bad drainage.

REID ALEXANDER, M. D.,
Chemist for the State Board of Health.

NATIONAL CONFERENCE OF STATE BOARDS OF HEALTH,

AT CINCINNATI, OHIO, MAY, 1888.

REPORTS OF DELEGATES.

As was expected, I went to Cincinnati, Ohio, to attend the National Conference of State Boards of Health, which met, as advertised in its circular letter, on May 4th, in the ordinary of the Grand Hotel. The President, J. N. McCormack, M. D., of Bowling Green, Kentucky, called the Conference to order promptly at the designated time for it to assemble. The Secretary not being present, C. O. Probst, M. D., Secretary of the Ohio State Board of Health, was made the Secretary.

The proceedings were entertaining, and when published will no doubt be instructive. The reports and papers drew from members present, in some instances, lively discussions. It was quite apparent that differences of opinion do still exist, even among sanitarians, as to sanitary matters and the mode best fitted to carry forward the work of health reforms.

As I depended upon the daily papers, I did not take notes of the proceedings of the conference, and hence am unable to make as full and satisfactory a report as I had hoped to make; but this want will only be temporary, as the Conference employed a stenographer who took verbatim all that was spoken by any member present, and his notes of the discussions, together with the papers read, will be published by the Pennsylvania State Board of Health, when each one who has any desire to read a full report may do so by getting it from the Secretary of that Board, who will no doubt furnish copies to the different State Boards.

In their report of the meeting held at Washington last year Drs. Schenck and Surber said: "We cannot see that the National Conference was a grand success." The same sentiment may with equal propriety be expressed with reference to the session held at Cincinnati. It seemed that much of the interest that should have attached to the work of the Conference, similarly to that of the meeting at Washington, though not by a simultaneous meeting yet by an anticipated one, was absorbed by the greater assemblage which was to convene in a few days. Everything seemed to be getting ready for that occasion, and thus but little attention was shown to the Conference, which, if sanitary matters are worth anything like what is claimed for them, was of quite as much importance, not only to Cincinnati but to the whole country. Nobody, not even the papers, showed that attention to the work of the Conference which one might naturally enough expect would be given to a conference composed, as this one was, of sanitarians from almost every section of the country. Here were assembled representative men, and some

of them eminent sanitarians, from all over the country—from California to North Carolina, from Michigan and Toronto, Canada, to Tennessee, and from Pennsylvania, Illinois, Iowa, Wisconsin, Minnesota, Kentucky, Ohio and Indiana, not to mention our own State of Kansas, since we are not expected to know much about matters of sanitation, being so young and but recently organized. I say here were assembled a class of men representing not the interests of their own cities or States alone, but those of the entire country, who had no more consideration shown them by the authorities, the citizens or the public prints than if they had met for the purpose of discussing whether the moon had been constructed of cheese made of skimmed milk, or whether cream had been used. Let as many men from as many different States as were represented meet to discuss the comparative merits of different breeds of cattle for beef or milk; of hogs for pork; of horses for draft, speed, or road; of sheep for wool or mutton, or any other class of live stock, and the whole city would have stood tip-toe in attention, with bated breath and all the cotton pulled out of their ears, in order to catch the softest whisper of the least interesting of all the speakers. The papers, too, would have been overflowing with reports and the less significant items of the meeting.

But I do not suspect that all the indifference manifested was due wholly to the want of interest in things sanitary; there may be something attributed, no doubt, to the little ripple of excitement at Washington, which spread like a pestilence until the whole country sympathized in the excitement occasioned by the forensic exploits of those intellectual athletes of the U. S. Senate, John J. Ingalls and Daniel W. Voorhees. Nobody could get done talking about that "round," in which one of the contestants was "knocked out" and failed to "come to the scratch" on call. And then the papers were full of the matter.

Some of the members were not in favor of meeting hereafter at or near the place and time of any great convention; and it does not seem that if the Conference cannot maintain its existence without regaling in the shadows of another association and enjoying the luxurious expectancy of hope deferred, then it had better sink back into the quieter and serener shades of desuetude. If it has not enough interests of importance of its own to draw sanitarians to its sessions, then indeed it is not worthy of support and confidence, and should be permitted to "draw the drapery of its couch about it" and to "slumber" in the ashes of indifference.

I enjoyed the meeting very much indeed. Everyone manifested a zeal and spirit of devotion to the cause of Sanitation. While their enthusiasm may at times have betrayed some of them into supporting measures which, for the present at least, might perhaps well be left for settlement to a more enlightened understanding of the real needs of the country, yet the work done by the Conference in the main was worthy of appreciation. As an instance of what might have been left undone may be mentioned an at-

tempt to pass a resolution, the greater portion of which seemed right and just enough, but was objected to by a sufficient number to defeat that part which classed scarlet fever and diphtheria as pestilential. Quite a lively discussion ensued before it was finally decided to strike the word "pestilential" from the resolution.

Where grounds for a diversity of opinion exist, would it not be more conducive to the establishment of sanitation to avoid pressing for unquestioning acceptance and adoption, theories that are not acknowledged to be established? Yet this insisting on the adoption of questionable measures is too often permitted to consume time in deliberative assemblies to the exclusion of more important matter. Everyone acknowledges, I believe, that diphtheria is contagious, but not to the degree that small-pox and yellow fever are contagious. Then why should time be spent in discussing whether quarantine should be established at the port of New York, or any other port, against diphtheria as against cholera or small-pox? Why keep health boards constantly exercised about diseases that may, while they are scouting the country to prevent an invasion, make a flank movement and capture the citadel in their absence? And why keep the people continually agitated over a disease coming into the port of New York, when the self-same disease is never absent from the country? Diphtheria is found here and there, and does not depend on whether some ship-load of immigrants is dumped at Boston or New Orleans. Dr. Schenck's cases, as reported on page 93 of the Third Annual Report for Kansas, never could have been prevented or influenced in the least by all the maritime quarantine that had ever been established.

But I must close this rather lengthy report after all, by expressing the belief that the Conference can and will accomplish much good, though the immediate benefits may not be fully realized.

J. MILTON WELCH, M.D.

Gentlemen of the Kansas State Board of Health: As one of your Delegates to the National Convention of State Boards of Health, I need only to report that valuable papers and addresses on the various subjects indicated in the program of the meeting, were made and discussed, full reports of which will be published by the convention, through the courtesy of the State Board of Health of Pennsylvania.

There was a good attendance from nearly every State Board, and the meeting was full of interest and zeal.

W. L. SCHENCK, M.D.

SYNOPSIS OF THE PROCEEDINGS.

The first session of the Conference took place on Friday evening, May 4th, at the Grand Hotel, Cincinnati, Ohio.

Dr. J. N. McCormack, of Bowling Green, Ky., President of the Confer-

ence, called the meeting to order. In the absence of the Secretary, Dr. Lindsley, of Connecticut, Dr. Probst, of Ohio, was appointed Secretary *pro tem*.

The President then read his address, which was brief, and the particular point of which lay in the stress with which he mentioned the fact that the quarantine facilities of New York are totally inadequate to the demands of the service.

Dr. P. H. Bryce, of Toronto, Canada, opened a discussion by reading a paper upon the proposition formulated by the Provincial Board of Ontario, "The duties of the Conference in urging the erection of isolation hospitals for treatment of infectious diseases, (as scarlatina, diphtheria, etc., as well as small-pox,) as a more economical and effective method than placarding houses and quarantining families where diseases are present." He urged the importance of isolation, and stated that the only means by which the necessary isolation could be obtained was by the establishment and maintenance of hospitals of that nature. He admitted, however, that when the proper isolation could be obtained in private residences, a removal to the hospital was unnecessary.

Many of the members participating in the discussion agreed with Dr. Bryce in his conclusions, but some doubted their practicability, except in large towns.

A committee of three was appointed by the chair to investigate the subject and report further. Dr. Orme, of California; Dr. Hewitt, of Minnesota; and Dr. Bryce, of Ontario, were the committee.

The Conference met promptly at 9 o'clock, on Saturday morning, May 5th.

Benjamin Lee, M. D., of Philadelphia, read an excellent paper upon the question proposed by the State Board of Pennsylvania: "Should the National Government assume the control of quarantine at all points of entry?" He advocated the strict regulation and control by the Government of all ports on the coasts where it was at all possible that infectious diseases could be imported. He concluded by offering the following resolution:

Resolved, That the Conference, recognizing the failure of local authorities to administer quarantine effectually in a large number of cases, respectfully urges upon the National Government the duty of assuming the control of quarantine at all ports of entry.

A lengthy discussion ensued, which was participated in by nearly all the delegates present. Finally the resolution was referred to a committee.

The afternoon was devoted to the discussion of one of the questions proposed by the State Board of Michigan: "What should be done to prevent the continued introduction of those dangerous, communicable diseases, (diphtheria and scarlet fever,) which are common in this country, and which therefore cause the most deaths?"

This formed the topic of a prolonged and animated discussion. Dr. Hewitt, of Minnesota, said he had rather have small-pox in his house than

diphtheria. All know that scarlet fever and diphtheria are as virulent and communicable as small-pox. Dr. Baker, of Michigan, said that the northern half of this country suffers more from these diseases than from either small-pox or cholera. There is no question but that diphtheria is more communicable in a cold than in a warm State. Several others spoke earnestly upon this subject, and finally the following resolution was passed:

Resolved, That in the judgment of this Conference the interests of the public health will be conserved by emphasizing the fact that diphtheria and scarlet fever are diseases of such highly-contagious and infectious nature that they should be dealt with by the most complete isolation of all cases, the most thorough disinfection of infected articles and places, and by quarantining at the seaboard, and at all other places, with the same care that is taken with reference to small-pox and cholera.

A resolution was passed, with very little discussion, recommending the passage of a bill before Congress establishing seven well-equipped quarantine stations at various points on the Atlantic, Gulf and Pacific coasts.

The two questions proposed by the Provincial Board of Quebec and the State Board of Vermont, were considered together, and were widely discussed: "What powers should Provincial and State Boards have over local boards?" and "What legal authority ought State Boards of Health to possess in the absence of local boards?" The discussion consisted mainly in a statement of the laws and systems in use in different States. In most of the States the authority resided in the local boards, the State Board having merely advisory power; but it was generally conceded that the State Board should have power to compel a local board to act, or to act in its place, or in its absence.

In the evening of Saturday, the questions proposed by the Michigan State Board, were taken up freely, and fully answered by nearly all of the delegates, viz.:

What is each State Board of Health doing to advance sanitary science?

- a. By the collection of statistics of deaths, and their causes;
- b. By the collection of statistics of sickness;
- c. By the collection of statistics of meteorological conditions coincident with sickness and deaths.

Each of those present stated the system and efficiency of the vital statistics in the different States represented in the Conference.

On Monday, May 7, the Conference met at 10 A. M.

On motion of Dr. Hewitt, of Minnesota, it was

Resolved, That a committee of nine be elected by the Conference by ballot, to visit or correspond with the State, Provincial and other authorities having in charge the seaboard quarantine against dangerous, infectious diseases, for the purpose of learning the methods there in use, and the character and amount of coöperation such authorities can and will give for the best protection of the people of this continent against such diseases; and that said committee be authorized to act for this purpose, and be instructed to report the results of their investigations to this Conference and to the State Boards of Health; and to arrange for such proper coöperation

between the health authorities of this country, should any such disease threaten to invade or actually get a foothold on this continent; such committee to have power to fill vacancies.

This resolution, after having been thoroughly discussed for several hours, was passed, and the following were elected as the committee:

C. M. Hewitt, M.D., of Minnesota; H. B. Baker, M.D., of Michigan; J. H. Rauch, M.D., of Illinois, *Chairman*; J. N. McCormack, M.D., of Kentucky, *Secretary*; J. N. Evans, M.D., of South Carolina; H. S. Orme, M.D., of California; John D. Jones, M.D., of Ohio; P. H. Bryce, M.D., of Ontario, Canada; Benjamin Lee, M.D., of Pennsylvania.

Dr. Orme, of California, opened the discussion upon questions proposed by the State Board of Health of California, viz.:

Can the cholera be communicated in any other manner than through the alimentary canal?

In the event of cholera reaching America, can it be prevented from becoming epidemic? If so, how?

A lengthy discussion followed. It was generally conceded that the first question must be answered in the negative.

Several other questions proposed by State Boards were read, and on motion postponed.

Dr. Baker made the following report from the committee appointed to draft a constitution and by-laws for the Conference:

CONSTITUTION.

Name.—The name of this association shall be “The National Conference of the State Boards of Health.”

Membership.—The members of this Conference shall be the executive officers or other delegated representatives of the State Boards of Health of the United States, and of the Provincial Boards of Health of the Dominion of Canada.

Dues.—Each Board represented shall pay to the Treasurer of the Conference five dollars per year.

Votes.—Whenever demanded by two delegates, any question shall be determined by a vote, each State being entitled to one vote.

Officers.—The officers of this Conference shall be a President, Secretary, and Treasurer. The duties of each officer shall be those which are usually performed by such officers; and collectively the officers shall be an executive committee to make suitable provisions for meetings of the Conference, for program, etc.

Parliamentary Rules.—Cushing’s Manual shall be the guide to parliamentary action, in cases of question.

Amendment of the Constitution.—Notice of any proposed amendment to this constitution shall lie upon the table from one annual meeting to another before coming to a vote. Such notice having been given, the constitution may be amended at any regular meeting of the Conference, if a majority of the States and Provinces represented vote in favor of such amendment.

On motion by States, this constitution was unanimously adopted.

Standing committees, being called upon, made partial reports and were continued.

The Conference then proceeded to the election of officers for the ensuing year, with the following result:

President—J. N. McCormack, M. D., Kentucky.

Secretary—C. O. Probst, M. D., Ohio.

Treasurer—H. B. Baker, M. D., Michigan.

On motion of Dr. Baker, it was voted that the thanks of the Conference be given to the State Board of Ohio for printing the Transactions of last year; also, to the Committee of Arrangements for the present meeting.

Dr. Lee, in behalf of the State Board of Pennsylvania, offered to print the Transactions of the present annual meeting.

The time and place of holding the next annual meeting elicited considerable discussion as to whether or not it should be held at the time and place when and where the American Medical Association should hold its next meeting. Finally it was decided to leave it to the Executive Committee.

Voted, to adjourn *sine die*.

AMERICAN PUBLIC HEALTH ASSOCIATION,
AT MILWAUKEE, WISCONSIN, NOVEMBER, 1888.

REPORT OF DELEGATE.

Mr. President, and Members of the State Board of Health: The sixteenth annual convention of the American Public Health Association began its sessions in Atheneum Hall, Milwaukee, Wis., on Tuesday, November 20, 1888, with President Charles N. Hewitt, M. D., of Red Wing, Minn., Secretary Irving A. Watson, M. D., of Concord, N. H., and the venerable Treasurer, J. Berrien Lindsley, M. D., of Nashville, in their places. After prayer by Rev. Theodore Clifton, the roll of members was called, and the reading of the minutes of last meeting postponed. A large number of new members was added to the roll. The financial and executive reports were read and approved. Health Commissioner Martin, of Milwaukee, then made a short address of welcome, and read the report of the local committee of arrangements.

In the absence of other papers expected, the rest of the session was taken up in considering the report of Major Smart on the "Pollution of Water Supplies," giving authorized consensus of opinion of the Society's committee on the subject. The substance of it was, according to Major Smart, backed by English authorities, that "rivers which have received sewage, even if that sewage has been purified before its discharge, are not safe sources of potable water." The paper was very exhaustively discussed by Drs. Vaughn, Rauch, Hicks, Horsch, Walcott, Rohé and others, confirming the report in all vital essentials.

The Association then adjourned to the Plymouth Congregational church at 8 P. M., to listen to the President's annual address. The Association found itself comfortably seated in the lecture-room, when the President, Dr. Chas. N. Hewitt, delivered his address to a large and appreciative audience. He is a keen and incisive writer, and held the undivided attention of his hearers to the end, frequently leaving his manuscript in brief but brilliant extemporaneous flights. It was a very able and thorough presentation of the many important questions demanding the attention of the sanitary student and reformer; and his brilliant, incisive way of making his points increased the pleasure of listening to him.

The Association then adjourned to Atheneum Hall, Nov. 21st, at 9 A. M.

The second day's session began promptly at 9 o'clock. Routine business was disposed of, the executive report considered, and a large number of new members admitted.

The first paper was by Dr. Benjamin Lee, of Philadelphia, on "Quarantine Observations on Atlantic Coast during Summer of 1888," read by Dr. George H. Rohé, of Baltimore.

Dr. Crosby Gray, Health Officer of Pittsburgh, Pa., followed with a paper on "Contamination of Water Supply of Pittsburgh from Surface Drainage." He gave the history of a well-known epidemic of typhoid fever, with an elaborate calculation of the money loss to that city from the loss of life caused by that epidemic.

Dr. Henry B. Baker, of Lansing, Mich., Secretary of the Michigan State Board of Health, then made a short but very effective plea for the more prompt, careful and methodical collection and classification of vital statistics.

This was followed by a paper on "Yellow Fever Panics and Useless Quarantine," etc., by Dr. John H. Rauch, Secretary of the Illinois State Board of Health, which excited unusual attention, from the author's well-known opposition to the quarantines enforced during the recent yellow-fever epidemic and scare at the South. Dr. Rauch, as the veteran Secretary of the Illinois State Board of Health, and the profound and versatile sanitary student and reformer of twenty years' standing, is well known from one end of the country to the other; and it is safe to say that this paper was the best, most complete, and authoritative expression on this subject that has yet appeared from any source whatever.

City Engineer Benzen, of Milwaukee, then gave a short description of the city system of water-works, flushing and sewerage, which the members were invited to inspect during the afternoon, and the Association adjourned for dinner.

The afternoon was taken up by an inspection of the city water-works, drives to various places of interest, and the interchange of social courtesies; after which, upon reassembling at the Atheneum, papers on quarantine were presented by Drs. Frederick Montizambert, L. N. Solomon and S. H. Durgin, quarantine officers respectively of the Province of Quebec, New Orleans, and Boston.

Dr. L. S. Kilbington, President of the State Board of Health of Minnesota, read a paper on "Cremation of Garbage," which was described by Health Officer DeWolf, of Chicago, as the most complete and helpful presentation of this subject worked out and presented to the public.

Lack of time prevented a thorough discussion of these last papers, and when Health Officer Clark, of Buffalo, had presented a short account of that city's crematory, which was working most efficiently and satisfactorily, the afternoon session was brought to a close.

In the evening, a reception tendered to the members by the citizens of Milwaukee, was held at the Atheneum. It was largely attended, and a most enjoyable evening was passed in conversation, interchange of social courtesies, enlivened with fine music and elegant refreshments.

The third day's session began promptly at 9 o'clock.

After routine business, Dr. R. Rutherford, Health Officer of Texas, read a history of quarantine in Texas, from 1878 to 1888.

After which the Advisory Council reported nominations for officers for next year: President, Dr. H. A. Johnson, Chicago; Vice-President, Dr. Jerome Cochran, of Mobile; Secretary, Dr. Irving A. Watson, of Concord, N. H.; and Treasurer, Dr. J. Berrien Lindsley, Nashville, Tenn.

A paper on "Problems of Yellow Fever Epidemics," by Dr. Jerome Cochran, of Mobile, was of special note, and received special attention. Also, one on "Tuberculosis," by D. E. Salmon, Chief of Government Bureau of Animal Industry. "Disease Germs," by Theobald Smith, M. D., of Bacteriological Laboratory of the same bureau. Correspondence was also received from Joseph Holt, M. D., Portland, Oregon.

The fourth and last day's session opened at 9 A. M., Friday, November 23d, with the transaction of routine business, disposal of miscellaneous matters, reception and referring of papers that had been delayed, or for the reading of which there had not been time, which will appear in the volume of the Society's proceedings.

After these had all been disposed of, the report of the Advisory Council, making nominations, was taken up, and officers elected for the ensuing year.

The Society then adjourned, to meet November, 1889, in Brooklyn, New York.

D. C. JONES, M. D.,

Delegate from Kansas State Board of Health

MISCELLANEOUS PAPERS ON HEALTH TOPICS,
AND
SPECIAL REPORTS ON CONTAGIOUS DISEASES.

VITAL STATISTICS.

BY W. L. SCHENCK, M. D., OSAGE CITY,
Member of the State Board of Health.

Believing the purpose and importance of vital statistics are not understood or appreciated, we desire to present to the Board, and through it to the public, a brief discussion of the subject.

Dunglison defines vital statistics as "that part of medicine which relates to the detail of facts connected with the mortality, salubrity, etc., of different countries and situations." They are the collection of facts relative to the marriages, births and deaths of the people, the prevalence of endemic diseases, and other causes and conditions bearing upon health and life. They are the data through which the State is advised of its health, growth and prosperity, and their hindering causes.

The prevailing thought with nature in animal and plant life is the preservation and perfection of species. The ideal thought of the State should be to so protect the interests of the present, that it shall redound to the glory of the future. While "governments are instituted to secure life, liberty, and the pursuit of happiness to the governed," they must not only provide for the present generation such development and protection as will make it healthy, happy and prosperous, but such as will make each succeeding generation better, wiser and stronger than its predecessor, and thus write *Esto perpetua* on the banner of the State. Governments rest upon the lives of the governed. Health and longevity, with intellectual, moral and physical growth and development, are essential to their success. Accurate tables of vital statistics are the first steps in the science of society, and are of incalculable importance, not only to the sanitarian, but as well to the political economist and statesman.

Registration of marriages and births is the tally-sheet of the prosperity, virtue, and growth of the State. When the State is prosperous its young men indulge in the luxury of a wife, and its record of marriages tallies with its prosperity, and forecasts its future possibilities; so an increased registra-

tion of illegitimate births shows not simply an increase of immorality, but a decrease of financial prosperity.

In addition to their importance as vital statistics, a correct record of marriages and births, properly preserved, furnishes to every child born in the State proof of parentage and protection against fraudulent claimants to property to which it is the rightful heir. In questions of descent, the wisdom of the learned and the wealth of the rich may enable them to preserve and present to the courts necessary evidence of inheritance, but around the the poor and the ignorant the State must throw its protecting arm and furnish the records required by its courts, that all may stand equal before the law. In European countries, though monarchies are not supposed to specially regard the interests of the people, the record of vital statistics is so complete that the poorest citizen can easily prove his pedigree. In America, where many of our individual States greatly surpass the petty kingdoms of Europe, and where our people are ever on the move, unless the State preserves the record all proof of inheritance is soon lost, as is evidenced by the records of all our courts.

The great purpose of statistics of death and disease is to protect the people, rich and poor, high and low, from danger; warning them away from unhealthy localities, calling physicians where their services are needed, and saying to boards of health: Discover the causes of disease, and see that they are abated. While a proper record of deaths tends to lessen crime, by preventing criminals from concealing the cause of death, and to protect the lives of the people from death at the hands of ignorant pretenders, its legitimate purpose is to show the causes and prevalence of disease and death, and so indicate the necessity for hygienic action. The duty of the State in this respect is without question. To protect the citizen against unnecessary disease, injury and death, is its first duty. To point out and provide relief for those who are being poisoned by excretions and emanations, or injured in body or mind by other causes over which they have no control, or slain by small-pox, cholera, diphtheria or other ruthless destroyers, is as clear and positive a duty as to protect them against assassination and murder; and as an hundred die from disease and accidents where one dies from violence, it is much more important to the citizen and the State.

The importance of collecting and preserving records of disease and death is too apparent for argument. If we do not know the causes of death, how can we know what remedy to apply? If we do not know where Death reaps his harvest, how shall we know where to apply the remedy? Whenever science has demonstrated that certain conditions are detrimental to health and dangerous to life, and vital statistics have pointed out their existence, boards of health must be empowered and required to abate and remove them. Vital statistics inform the people, as well as physicians and sanitarians, whether their methods are or are not beneficial. In their absence, this cannot be accurately known. Thus, the oldest systematic registration of such

statistics in Europe dates back only a century, and shows a steady improvement during that period, and a gradual increase of twenty-five per cent. in the length of human life; and in places where sanitary laws have been most rigidly enforced, and quackery most thoroughly abolished, as in London, England, these records show, that while one hundred years ago one in twenty of the inhabitants died annually, now but one in forty dies; or an increase in longevity of one hundred per cent.

To those who appreciate the importance of vital statistics the question constantly recurs, why are they so often a failure? First and chiefly through want of appreciation on the part of the public and the profession of their importance.

Section 5 of the act creating a State Board of Health in the State of Kansas provides that "the State Board of Health shall supervise the registration of marriages, births and deaths; that they shall prepare the blank forms necessary for obtaining such records, and forward such of them to the health officers of the local boards as may be required by physicians, assessors, local boards and others whose duty it is to gather information in relation to the vital statistics of the State, and that any violation of these rules shall subject the offender to a fine of ten dollars for each offense."

The State Board of Health of Kansas has performed the duty assigned to it. Blanks have been placed in the hands of the local boards, and by them distributed to the parties whose duty it is to collect and forward the required statistics. Examine the first item in vital statistics — marriages: Ministers of the gospel, probate judges and justices of the peace — chiefly ministers — are recognized as the persons who should furnish these statistics. In many counties the statistics indicate that there are neither ministers nor marriages, and in all that marrying is out of fashion and well-nigh obsolete.

We can hardly believe that those who from Sabbath to Sabbath make the air resonant with their outcry against law-breakers are intentionally guilty of the predominant and persistent violation of a law important to the well-being of society. The only charitable view of their disobedience is, they do not appreciate its importance. But the good citizen obeys the law, though he may not comprehend its force. How many congregations comprehend the logic of all the laws their ministers proclaim? How many ministers would accept, as sufficient excuse for their neglect or violation of the law, the plea of failure to comprehend its importance.

The second reason is found in the fact that the people, through some strange ratiocination, have decided that health laws are for the benefit of doctors. Wonderful conclusion! Laws to prevent disease for the benefit of those who live by curing disease! As well consider laws against usury for the benefit of the usurer; or laws to prevent exchange for the benefit of those who live by exchanges. "But," the people query, "if not, why are physicians most active and earnest in the advocacy of such laws?" Truly, a natural question in this selfish world. But, paradoxical as it may seem,

it is as much the moral duty of the physician to prevent disease as to cure it. Knowing the possibilities of disease, he comprehends the importance of protection, and whatever other human weaknesses he may have, the honest and intelligent physician is always in the forefront in every philanthropic effort to remove the causes and prevent the diseases that destroy mankind. In sanitary reforms, he has never halted or hesitated because they lessened his income by limiting the number of his patients. With him the narrow limits of self have always been dwarfed by the broader interests of humanity. It is only the unscrupulous quacks and narrow-minded hucksters of the profession, the itinerant charlatans, seventh sons of seventh sons, Indian doctors, *et id genus omne*, who are ready to resolve that legislation in the interest of public health is "timely when the people demand it," and to throw obstructions in the way of preventive medicine; who, instead of leading the people away from disease and death, by means they *ought* to comprehend, lay like beasts of prey in their way, waiting and watching for blood. This class of doctors are prompt to report births—they show business; but fear to report deaths, which show failure. The neglect is *prima facie* evidence that in their own judgment they belong to the Hornbook school, of whom Death complained—

"Where I killed one a fair strae death,
By loss o' blood or want o' breath,
This night I'm free to take my aith
That Hornbook's skill
Has clad a score in their last claithe
By drop and pill."

The third objection to vital statistics is, they cost money. "There is nothing valuable without labor," and "The laborer is worthy of his hire." If they do not, they should cost money. Accurate statistics require for their collection both honest and skilled labor—comparatively rare endowments and acquirements. It costs money to keep accurate records of the purchase, mortgage and transfer of each foot of land in the State. If the knowledge of the ownership of land is important, the life that enables one to own, and the health that enables one to enjoy it, is vastly more important. Vital statistics of marriages and births may enable the rightful heir to hold the land, while statistics of disease and death may enable its possessor to keep and enjoy his possession. It is for the larger interest the sanitarian pleads.

That vital statistics may be correct—and otherwise they are deceptive and without value—there must be prompt and accurate reports, which must be systematized and consolidated. All this does not happen without effort. Laws are not self-executing. Officers are created to supervise their execution. We justly complain that the law creating the Kansas State Board of Health has given it little power to act for the good of the State, and yet thus far it has permitted the minimum of power with which it has been en-

dowed to become a dead letter. Section 9 of the act to create State and local boards of health provides that—

“It shall be the duty of every physician practicing his profession in the State of Kansas to keep a record of deaths occurring in his practice, or that may come to his knowledge where death occurs without medical attendance, noting the form of the disease, and as far as possible the cause which produced it, and report the same to the local board of health where the same occurs, at the time and in the manner prescribed by the State Board of Health; and any failure to do so will subject said physician to a fine of ten dollars for each and every offense.”

How many of the physicians throughout the State who are complaining of the inefficiency of the State Board, comply with the law, and thus make it possible for the Board to collect vital statistics? If State and local boards of health have any reason for their existence, they are created to *exercise* the power intrusted to them in the interest of public health. As it is the duty of the judge to see that sheriffs, clerks, witnesses and others connected with the court and necessary to its efficiency do their duty, so it is the duty of this Board to see that those severally designated by the law to discharge duties necessary to its efficiency, comply with the law. If the State expects the citizen to discharge his duties, much more does it expect those appointed or elected to perform special service, and intrusted with larger interests, to do their duty. To permit delicacy of feeling to interfere is evidence of a mistaken idea of duty, and is no better excuse than indolence or the pressure of extra official engagements, which indeed are too often the real significance. The reports of our Secretary show an almost total failure in every county in the State to comply with the requirements of section 9. For example, the Health Officer of Shawnee county says: “Even after supplying physicians with postals for a report, less than a dozen out of 100 in the county responded.”

Dr. Haller, of Osage county, reports: “Not half of the physicians registered in this county, report either births or deaths.”

Dr. Simmons, of Douglas county, reports: “I regret that the reports of deaths received during the last year are so incomplete as to render those that have been received practically worthless.”

Dr. Johnson, of Jefferson county, says: “As only a small portion of the physicians of the county pay any attention to the health laws, it is hard to make a report.”

And so we might make from the published reports of the Secretary, quotations from every health officer in the State.

If vital statistics, which are the foundation of all efficiency and progress in sanitation, are not worth collecting, boards of health are not worth creating. If the law that provides for their collection and imposes a penalty for every case of negligence, is a fraud, let that fact be understood. But if this Board has any reason for its existence, and the law any vitality, let us see that it is executed. If we cannot, will not, let us resign and ask for

the appointment of those who can and will. However limited the power given us, we recognize the importance of vital statistics, and it has empowered us at least to collect them in part. It has given us an executive officer, paid by the State, to make public sanitation advantageous to the State. It has made him the arm through which we are to act. He is constantly in receipt of reports showing that the plainest, clearest provisions of the law are constantly violated. Is it not the duty of the Board to require the violators of the law, under its special jurisdiction, to be brought before the proper officers to answer for their offenses? If the executive officer of this Board, to whom compliance with the law is intrusted, employed and paid for such service, will give intelligent, energetic and unwearied effort to this duty, commencing with Shawnee county and extending his efforts, if need be, to the remotest boundaries of the State, we will cease to have these constantly repeated reports of failure. If not, we may then ask, what next?

Law-abiding physicians who appreciate the importance of vital statistics to the State, and who might aid in seeing the law enforced, have little opportunity of knowing who are guilty of its violation. The Secretary of the State Board has all possible means of knowing, as he is in constant receipt of reports from both undertakers and physicians; the undertakers' reports constantly evidencing the negligence of the physicians. Aside from want of proper knowledge, competing physicians may feel an excusable delicacy in reporting their fellow-practitioners, lest their motives be impugned. It is the official duty of the Secretary to see that the provisions of the law are made effective, and no such suspicion can attain his action.

The law may be made more efficient and easier of execution, if under the powers granted the Board it requires a permit for burial from the attending physician, or where no physician was in attendance, from a justice of the peace, setting forth, as far as known, the cause of death, and requiring both physician and undertaker to forward such certificate to the county health officer, to be by him reported to the Secretary of the State Board of Health.

A proper registration of vital statistics will be its own corrector of negligence and opposition. So important will be the results, not only to the health interests of the State, but to insurance, pensions, and various other interests, that they will be esteemed the most valued statistics known to the State. So general will be their appreciation, that a State or physician refusing or neglecting to collect and record them will place a stigma upon themselves, by indicating a death-rate that will not bear exposure, and a stupidity that will not permit improvement.

The judicious and efficient exercise of the power we have will be the most effective argument that can be used for the proper enlargement of the powers of the State Board of Health.

“THOU SHALT NOT KILL.”

BY MRS. J. M. PATTEN, OF BELOIT.

“Thou shalt not kill,” are the plain, emphatic words of the Sixth Commandment of that code of moral laws, given on Mount Sinai by the Lord of Hosts unto Moses, who gave it unto the people, and which has been handed down to the present time, and enters largely into the statute of every Christian Government.

After these laws were duly proclaimed, in order to make them effective, a penalty was attached to each commandment. The penalty for the sixth was, “life for life.”

“Thou shalt not kill;” there was no extenuating clause, no if, no but, simply these four short words, “Thou shalt not kill.” The law-giver did not command, “Thou shalt not shoot or blow up, or slash thy neighbor or thy enemy unto instant death, or poison him slowly with subtle deadly poison known to science, but thou can’st *poison* him by *degrees* with *impure water*, *foul air*, or *adulterated food*;” but the command was, “Thou shalt not kill”—by no means whatsoever shalt thou *murder* him.

The city, county and State government—the wheel within the wheel—work in harmony for the protection of human life, and unto these must we look for preservation of our lives and the lives of those near and dear to us, from the evil passions of vicious men and women. Where there is no real government, or at best a lax one, where all is disorder and lawlessness, there life is little thought of or cared for; and a man takes his life in his own hands, so to speak, when he goes where there is no government to protect him. If a man is murdered in a civilized country—be he ever so friendless—does the murderer, if known, go free? By no means. Government has created certain offices, which are held by men capable, or at least supposed to be capable, of performing the various duties of said offices. When a murder is committed and made known, the officer whose duty it is to search for and seize the criminal attends at once to his task. Now these officers never let a man who has killed another escape their vigilance, if possible to find him. They will follow him for months; wherever a clew is supposed to be discovered, thither they must go to ferret it out; in fact, nothing is left undone by the authorities to protect life, and to avenge the crime of taking life; and any officer who failed to do his full duty, would be obliged to step down and out.

No one thinks an officer is wasting time or squandering money, in the search or prosecution of this class of criminals; nor that the murderer, when proven guilty, should not pay the full penalty, be that penalty what it may. Even a known attempt at murder is punishable by law, and is

looked upon with a measure of the horror which comes with the knowledge of crime committed.

Now if we look to those in authority to protect human life against the assassin—the murderer—to avenge the wrongs thus committed, why not look to them to protect us from other causes, which do, and must in many cases, result in death, though in a far different manner?

The State establishes free schools for the sake of securing good citizens: why not make healthful, happy citizens as well? How did the Spartans become the race of warriors of which history tells us? The State took the matter in hand, and the children, both male and female, were trained to that end. Now suppose that this course of physical training had been as rigorously carried on by all governments down to the present time, along with sound mental training: what races of men would now people the earth! In imagination compare them with the people as they now are: disease, sickness, suffering, everywhere, carrying thousands on thousands to untimely graves—all for the want of proper training.

The males of Sparta were trained to make warriors, the females to become mothers of warriors. Why not train the children of our time for peace and harmony and happiness? Train them for the full enjoyment of life. Why not make life worth the living for the masses? For with pure blood coursing through the veins, with well-balanced brains, in sound bodies, they could laugh at the minor annoyances of life, which, with diseased bodies, seem insurmountable.

Why should not every State feel the responsibility of these things? Why not each State see that its children, young and old, are protected against the tide of adulterated food, flooding its markets? Why not see to it that the air, the pure air of heaven, is kept pure by strict sanitary laws; that the water supply is fit for use; that every person within the limits of a State is as thoroughly protected against murder in any form as it is possible to have them protected by law—at least as well as man's pocket-book? Think of the numerous towns and cities in our own State where people have herded together for a decade or more without one single "cleaning-up time;" think of the stench, constantly arising during our long warm season, tainting the air, wells poisoned by underground drainage from cess-pools, or the inadequately-filtered water of the larger cities, murdering by degrees every one within the town; think further of the lamentable ignorance concerning the consequences of these things, among the many in town and country; and then I will ask, is it not meet and right, and the bounden duty of every government, to interfere in these matters? Is it not imperative that each State shall enact and enforce, *rigidly*, laws that shall rid the land of its contaminating filth?

Scattered among the masses are many who do know, and fully realize, the terrible consequences of this criminal neglect, who try with all their power to keep things about them sweet and clean, and who yet are com-

pelled to breathe the surrounding atmosphere, filled with its *poison*, unless they cease forever to breathe, as very many do; many who, perchance, have to watch by the death-bed of a loved one, dying of some *filth disease*, such as typhoid fever, diphtheria, etc., caused by neighbors' filth — murdered, just as much as if these criminally-negligent neighbors had willfully *killed* the poor sufferer; and yet who must quietly submit, and listen to a long rigmarole on the dispensations of Providence, as they consign the precious forms of dear ones to the cold grave. Providence, indeed! *Filth*, my kind hearers; nothing but filth. I have no patience with this "hand of Providence" preaching in the affairs of men, when nine times out of ten man's troubles come through his own or somebody's thoughtlessness.

Having lived in one of these new western towns (not that towns in other localities are any better) where there has never been any serious attempt at sanitary measures, and by force of circumstances obliged to reside in the thickest settled portion of the city, and where, during the heated term, life at times has seemed anything but desirable, I know whereof I write. I have talked and talked, and even *begged* through the columns of the weekly papers that something might be done; have publicly told those in authority when some dread scourge was doing its worst that it was caused by criminal neglect, yet never a response worthy the name; perhaps one or two reeking vaults in my immediate vicinity have been covered up, an obnoxious pig-pen removed, is all I have accomplished; and in my extremity I have longed for higher power to appeal to. And yet how soon a force of men with an orderly, clean housewife as overseer, could cleanse and renovate any small town, if every man could but see the necessity or be made to see it.

If for one thing more than another I have felt the need of the ballot, or of woman's hand and mind in the making of laws, it has been for this same sanitary work. I think there is more imperative need for thorough sanitary laws, whereby the people can have pure air, pure water, pure food, than of this battle against intoxicating liquors. This craving, inherited appetite for strong drink, that sends so many into drunkards' graves, would be in a measure quenched if they had been trained as the Spartans were; if the State would thoroughly protect its citizens. Talk of teaching the rising generation the baneful effects of alcohol, and then surround them with the same depressing influences, giving them the same perverted tastes of their fathers! Rather let each State go to work and endeavor, by every known means, to purify the air which the children must breathe, cleanse and purify the water which they must drink, procure for them pure, unadulterated food, train them physically, force them not mentally, and you will do more for and toward the cause of universal temperance, more for the coming generations, than if the prohibitory amendment were passed in every State in the Union.

"All that a man hath will he give for his life." If then life is so desirable, if the instinct for its preservation is so strong, what ought not a State strive

to do for the saving of the life of its people? Why not ponder these things in your hearts, ye men in power, and help the toiling, struggling masses to battle with disease and come off conquerors?

SMALL-POX AT WICHITA, KANSAS.

BY J. MILTON WELCH, M. D.,

Member of State Board of Health.

On or about the 8th of December, 1887, a man who reported that he came from California, stopped off at Wichita. He was sick; but no one, it seems, knew the nature of the sickness. It is not known that he knew himself what was the trouble with him. He went to a boarding-house and was there sick; but to be nearer to a doctor, he left this place and went to another boarding-house, where the true nature of his disease was discovered. In writing to Dr. Redden, I reported, as I recollect it now, that this man died of small-pox; but this is not true. It was a misunderstanding of mine. The man got well, and left the city, as is believed; at least no one seems to know anything about where he went.

The first case that came down after being exposed to the disease brought here by the man from California, was a white man, who took the disease sixteen days after exposure, and died on the fourteenth day of his sickness. This is the case that I erroneously reported as having come from California. Two days after this man was taken, the landlady at the boarding-house where the California man stopped *first*, on his arrival in the city, took down with the disease. She recovered.

On January 30, 1888, the landlady of the second boarding-house to which the California man transferred himself, was also taken. She also got well.

From these places the disease spread, but through the activity of the City Health Board and health policeman it never became unmanageable. Strict quarantine was instituted, the City Council enacted a stringent ordinance concerning contagious diseases, a pest-house was provided on an island in the river below Douglas avenue about two miles, and it seemed that everything that was necessary to be done, was done. But in spite of this vigilance, the disease would crop out here and there every few days. Still, considering "the bustle and hubbub" of a town the size of Wichita, it is certainly a compliment to the efficiency of the health authorities that the disease spread no more than it did.

But it may be insisted that the restricted spread of the disease has not been due wholly to the activity of the health officers, and that the degree

of virulence or mildness will account in great measure for the comparative exemption from a general and fatal epidemic. This may be the true explanation of the matter, and that the authorities are entitled to but little of the credit claimed. But small-pox is small-pox, wherever found. The degree of its virulence, as I conceive, depends as much if not more upon the condition of the system when attacked, or on the hygienic or want of hygienic conditions of the environment of the one who is attacked, as it does upon any inherent property or modification of the disease itself, which may show itself at different times with greater or less virulence. It is claimed that the disease has been mild, which is but saying that the people are healthy, or that the hygienic condition of the city is good; or that the mildness of the contagion is due to the combined influence of both these conditions. It is true that in several cases the disease has assumed the confluent form, and that in other cases it has manifested a very malignant and virulent form; but it is also true that most if not all of such cases came from a class that inhabited poorly-ventilated apartments, where several were crowded together in one room, or were in some way or another surrounded with conditions not considered the most conducive to health and vigor.

But whatever virulence may depend upon—whether upon the character of the disease itself or upon want of vigor of body, and hygienic environment—it has not, except in a few cases, manifested a very malignant type of the disease. The small number of deaths up to the afternoon of the 7th would indicate this. There have been seven deaths out of fifty-eight cases, up to and including the 7th inst. The officers persist in saying that there have been but fifty-seven cases, but in the count they exclude the California case, which I have included.

There have been white, seven males and nine females, with one death. Of the four cases of varioloid, three were white females, and one white male.

Of the colored, there were twenty-seven males and fifteen females, one of whom was an Indian woman. The colored have suffered most from death, there having been six.

On the 13th of February a wash-house was discovered near the Second Ward school house, in which one man had had the small-pox a week or more. There were six in all composing the family, or that lived there. It was claimed by them that they did not know that it was the small-pox. It was feared that this would prove the means of spreading the disease to a fearful extent, but so far there seems to have been no case traceable directly to this hot-bed of pollution. All were promptly removed to the island and pest-house.

In conclusion, I will refer to rather a singular case of a man, if his story is to be believed. It is the last case reported. It seems that this man had been employed as a guard in quarantining; he had also aided in handling some cases of small-pox in transferring them to the pest-house. Before he would employ any one, Mr. Simison told me, he required that the party

must have had the small-pox. This man claimed to have had the disease, and had, in Iowa or Nebraska, helped to bury persons who had died of small-pox. Whether this is true or not, he seemed not to have any fear of the disease, and would, without any hesitancy, help move to the pest-hospital those who were ill of the disease. It is claimed that it had been about two months since he had been exposed to the disease before he was taken down; and this is the singular part of it—that he should go so long before taking the disease. I was told by Dr. Fonner, the city physician, that this man will certainly die; that he cannot live more than twenty-four hours. He has the syphilis, and had also indulged freely in intoxicants. He was taken from the Arlington House to the pest-house on the 6th inst. He also was shaved on the day he was removed. In the house were something near thirty-five persons. I could not find out the exact number. All were quarantined, and the house fumigated. The barber will be quarantined as soon as found.

Among the number at the hotel is a man who had his ticket purchased to go somewhere, and he too is placed with the others under guard. I advised that all this houseful be sent to the island, and there kept. Whether the advice will be accepted or not, I cannot say.

What will be the outcome of this last exposure must for the present be left to conjecture. There are thirteen cases left in the pest-house.

I append a tabulated report of all the cases, giving the date of taking the disease, color, sex, age and death, etc.

Date.	White.		Colored.		Disease.		Age.....	Remarks.
	Male	Female	Male	Female	Small-pox..	Variceloid..		
1887.								
Dec. 24.....	1				1		30	This case came from California on or about December 8, 1887.
" 26.....		1				1	30	Was taken 16 days after exposure; died on 14th day of his illness, December 31, '87. This woman kept the boarding-house first spoken of.
1888.								
Jan. 3.....		1			1		25	This woman kept boarding-house to which California man came, from one preceding.
" 4.....	1					1	30	Recovered.
" 5.....		1				1	12	Recovered.
" 6.....	1				1		25	Recovered.
" 7.....			1		1		23	Recovered.
" 8.....			1		1		24	Recovered.
" 9.....		1			1		55	Recovered.
" 10.....		1			1		1	Recovered; this was a child 16 months old.
" 11.....		1				1	2	Recovered; this case, in same family as above, was vaccinated after exposure.
" 12.....			1		1		15	
" 13.....			1		1		45	Died, February 17, 1888.
" 14.....			1		1		13	
" 15.....				1	1		20	Died, February 26, 1888.
" 16.....			1		1		17	
" 17.....			1		1		23	
" 18.....			1		1		21	
" 19.....			1		1		21	
" 20.....	1				1		21	
" 21.....			1		1		31	
" 22.....			1		1		35	Died, January 30, 1888.
" 23.....			1		1		22	

Date.	White.		Colored.		Disease.		Age.	Remarks.
	Male	Female	Male	Female	Small-pox.	Variceloid.		
1888.								
Jan. 27.....			1		1		7	
31.....			1	1			20	
31.....			1	1			19	
31.....			1	1			25	
31.....			1	1			18	
Feb. 1.....			1	1			26	
1.....			1	1			22	
2.....			1	1			2	
2.....			1	1			34	
2.....			1	1			5	
3.....			1	1			11	
3.....			1	1			3	
3.....			1	1			22	
3.....			1	1			21	
3.....			1	1			60	
4.....		1	1				35	
4.....	1						56	
9.....			1	1			19	This case came from Hutchinson.
13.....			1	1			27	
13.....			1	1			25	
13.....			1				10	
13.....				1			28	
13.....				1			4	
13.....				1			4	
13.....				1			19	
15.....		1					21	This was an Indian woman.
15.....			1				28	
20.....			1				49	Died, March 8th.
20.....				1			57	
20.....			1				21	Died, February 29th.
28.....			1	1			23	Died, March 7th.
28.....			1				24	Died, March 6th.
28.....				1			22	Died, March 8th.
28.....			1	1			23	
Mar. 6.....	1						40	Died, March 13th.
Totals.....	7	9	27	15	54	4		

HISTORY OF THE SMALL-POX EPIDEMIC AT McPHERSON.

REPORT OF THE HEALTH OFFICERS.

On Saturday, February 18th, at the request of Mayor Stabler, Doctors Logan, Bacon, Simpson, Harvey, Engborg and Health Officer Shelton, an examination was made of some cases suspected to be small-pox. The examination resulted in the opinion, concurred in by Simpson, Bacon and Logan, that the cases were small-pox; Dr. Shelton reported chicken-pox, while Drs. Harvey and Engborg, having been without experience, gave no opinion. Late in the evening Dr. McIlvain pronounced the disease small-pox. Dr. Day, not having examined the cases, refuted the small-pox theory, based upon the description of the disease as made to him by the physicians who had made the examination. But the investigation made Saturday resulted in bringing to light five cases in the Tremont House, six in the Gra-

ham House, and two or three in the Metropolitan. These buildings were quarantined the same evening, February 18th, and the work of tracing up the disease commenced, although the division continued among physicians and citizens as to the nature of the malady. Sunday evening, February 19th, City Clerk Welch went to Kansas City, and returned Monday night accompanied by Dr. Fee, whose statement was accepted as settling the matter. The Doctor remained Tuesday, giving directions how to proceed to control the disease and prevent spread. On Monday morning, before Dr. Fee arrived, it was Dr. Day's opinion still, from what he had heard, that the cases were not small-pox. Dr. Smith, whom we interviewed Monday morning, said he had not seen the cases, but that he had a case he thought chicken-pox—Eicher's child. Before night, however, both Day and Smith examined the cases in the Tremont and called them small-pox. At the Tuesday morning meeting of the Council and members of the Board of Trade with Dr. Fee, it was decided to build a pest-house, and publish the situation in the papers.

Up to date there has not been a known exposure since Saturday, the 18th, all the cases in the city and county having been exposed prior to that time, while every person exposed, or suspected of having been exposed, has come under close quarantine. The hospital on the county farm was completed and the work of removal commenced Wednesday, the 29th of February. This is the situation since the presence of the disease became generally suspected on Saturday, February 18th, and known Monday.

But to go back. About the 15th of December Davis brought his little boy from Emporia to this city. The child was well, and no person suspected that it had been exposed to small-pox. Mr. Davis and child took board with Mrs. Ames, in the north part of town. January 10th the child was taken sick and Dr. Harvey sent for; he pronounced the case chicken-pox, and so treated it, the child recovering in a short time. While sick it was visited by Mrs. Lawrence's little girl from the Metropolitan, who in nine or ten days was taken down with the same disease the boy had. Its grandmother from Emporia came and nursed it while sick, and on her return to Emporia she and other members of the family were taken, and treated at first by Dr. Jacobs for chicken-pox, but who, soon discovering the nature of the disease, wired to Mayor Stabler, Sunday, the 19th, that the disease was small-pox. Mrs. Ames discontinued keeping boarders, and she and some of her boarders went to board at the Graham House; another, Frazer, went to the Tremont House. It was not long after this that parties in the Graham, and Frazer in the Tremont, were down. Dr. Engborg was called to treat Frazer, Dr. Bacon to treat the Graham House patients, and Dr. Day the child at the Metropolitan. Frazer, not recovering, changed doctors two or three times, and finally drifted back to Engborg; but each physician in turn called his case chicken-pox, and it was so treated up to Saturday, Feb. 18th.

Monday, the 6th of February, Dr. Bacon was called in consultation in

the case of the child at the Metropolitan, and on his return consulted with McCourt, President of the Council, Stabler being sick. He told McCourt that he suspected small-pox as the disease with which the child was suffering, but that he could tell more certainly the next day. That night Dr. Bacon was called to Marquette. The next day McCourt and the City Council held a meeting, and Bacon not appearing Dr. Day was sent, and later Dr. Shelton, and both reported the case chicken-pox. This was Tuesday, February 7th.

On Bacon's return from Marquette he understood the other physicians had called the case chicken-pox, and so let it go, as it was not his case. This seemed to have ended matters until the following Monday, February 13th, when Dr. Cordier was over from Windom, and at Bacon's request went with him to see his Graham House patients. Cordier suspected the cases were small-pox, confirming Bacon's suspicions to the same effect. Dr. Shelton, at Bacon's request, went to see the Graham House patients on Tuesday, the 14th, and called the disease chicken-pox. Up to Saturday, the 18th of February, the cases had not been traced to the Davis boy as the source of the disease. Nor were the suspicions of the physicians, or even the fact of their having patients with disease resembling small-pox, known to the public or to the papers of this city. The Council, for two or three days before the 18th, knew of Bacon's suspicions, but the opinion of other physicians, including the health officer, and the report of chicken-pox from Emporia, allayed their fears and threw them off their guard. The reports, too, of chicken-pox, German and French measles in various parts of this and other States, had a tendency to allay suspicion of the real disease that was lurking in our midst.

Dr. Fee said it was not surprising that physicians should have been deceived as to the real nature of the disease, and especially physicians without experience with it. The Monitor and Windom cases came from the parties eating in the Tremont House February 9th and 11th; the Swarders family in Lone Tree, from the Graham House between the 11th and 18th; the Canton cases from the Graham House; the Groveland cases from the Metropolitan, and so the cases are all run back to the Davis boy, all of which were exposed before the presence of the disease became known in this city.

The small-pox is no longer a source of alarm. There are but two or three cases in the city, and they are convalescing. All others have been removed to the hospital, outside the city limits. The patients are doing well, and no further apprehensions of death are felt. We are informed that services will be held in all the churches on Sunday, and that the schools will be reopened on Monday.

REPORT.

Dr. Logan, in his health report for the past week, gives nineteen new cases of small-pox and varioloid, and two deaths, since making his report on the 3d. Several of the first cases taken down have almost fully re-

covered, and the prognoses of only two of the cases now existing are unfavorable to a speedy recovery. He also adds the following comment for the benefit of the people of the city, which we give in full:

"The authorities have experienced no more trouble or resistance in having patients taken to the hospital, and everyone seems to not only be willing but anxious to go, knowing they will receive the best of care and attention; and judging from the fact that there have no new cases developed for the last few days, and that everyone suspected of exposure has been most strictly quarantined for more than two weeks, it is reasonable to suppose that the worst is over. I am satisfied that we will have no further trouble, now that we have the city clean, to keep it so, and can throw her gates wide open to the world with impunity."

REPORT OF THE ATTENDING PHYSICIAN.

McPHERSON, KANSAS, March 20, 1888.

J. W. Redden, M. D., Topeka, Kansas—DEAR SIR: Hon. J. W. Stabler handed me your letter of the 14th instant, some two or three days ago, and requested me to answer it, and also at the same time send you a report of our small-pox epidemic from its first appearance in our city up to the present time—our plan of quarantine, its effectiveness, our future outlook, and so on. But I am sorry to say, Doctor, that we have depended upon our health officer to do this, and owing to the fact that most all my notes are at the hospital, it will be impossible for me to give you anything more than a synopsis of the affair this morning, but if desired, I will give it to you in a more complete and systematic form any time in the future.

Sometime in January, one of our doctors was called to see a little boy named Davis, at a boarding-house, and after carefully examining him, diagnosed it as varicella; but in a few days the patient got sicker than he was used to seeing them with trouble of this kind, and he called in the health officer, who confirmed the previous diagnosis, and the patient rapidly went on to recovery. A short time afterwards, the father and a lady nurse complained of feeling bad for two or three days, and a few vesicles appeared upon the forehead and wrists, but the doctor still suspected nothing; that as they were adults they would naturally have varicella very light, if at all. But about this time the boarding-house closed, and the boarders scattered out over the city in other cheap boarding-houses, and were soon taken sick, and of course each one called in his own physician; and I am sorry to say that in each case the physician was deluded by the story that the patient had been exposed to varicella, and each one thinking he had the only case in town, said nothing about it.

Thus matters continued for about two weeks. Others had come down, and some at the point of death, and different doctors in attendance began to call other doctors in consultation, which was about February 15th. The disease was diagnosed then by some of our physicians, for the first time, as variola, when the Mayor immediately called the Council together, and they decided to quarantine all places infected until further investigation, and re-

quested every physician to take disinfectant precautions and visit the different patients, and express his diagnosis, which was done, and the fraternity were about equally divided on varicella and variola. Of course under these circumstances the Mayor and Councilmen were still at a loss, and sent for Dr. Fee, of Kansas City. When he came, about February 19th or 20th, he pronounced it variola, which settled all doubt in the minds of the authorities, and they at once proceeded to take steps for its speedy eradication. Every person known to have been exposed, or even suspected, was placed under a most rigid quarantine. A hospital was erected, and all that were able to be moved were taken to it, three miles out of the city. The cases which have developed since have been taken out, with a few exceptions, where parties were well isolated from everyone else. I had this done on account of the crowded condition of the wards. Since the first week we have only had two cases develop outside of the quarantine, and no new cases recently. I am satisfied that we will not have any more outside the quarantine, and but very few more inside, for I must say to our credit, (even if we don't deserve credit for anything else,) that I never saw a quarantine more rigidly enforced, or one that was more effectual, than ours has proven to be. One month ago we had twelve cases in the city before we knew we had it at all, and to-day we only have thirteen cases under a physician's personal treatment, and only about ten or twelve more persons in quarantine that I consider liable to develop anything.

I will say, Doctor, that you need have no fears regarding the quarantine, for it is being enforced for all there is in it; it knows nobody, and you can rest assured that it is proving as effectual as it is rigid.

Now as to the cases: When I was appointed City Physician, on February 21st, I found in the city 14 or 15 cases, all persons who had never been vaccinated, with one exception. On March 2d, I think, I reported a total of 32 cases, 5 of whom had been previously vaccinated, and on March 9th a total of 52 cases, 9 of whom had been vaccinated. Since the 9th, 8 new cases have been developed, and only 1 previously vaccinated before exposure, making the grand total of 60 cases occurring and originating in our city. Out of this number, 8 have died, all of whom, with one exception, were chronic invalids, and 5 of them ranged in age from 60 to 73 years; 5 of the 8 were also hemorrhagic, or, more properly, confluent hemorrhagic in form, and 3 confluent, and I have 1 patient now, a baby 2 years old, with confluent hemorrhage and prognosis very unfavorable, being the only case that is unfavorable. The 8 last cases I speak of as developing since the 9th instant contracted the disease from the second exposure. I mean by this that they proved unsusceptible to the first case in the family, but afterwards contracted it from those that came down from exposure to the first. We have not had a new case for several days, and, as I have already stated, we have only a few more to expect anything from, and I don't believe we will have a single new development after a week from to-day. Of course we

may, for I know that sometimes nurses and physicians prove unsusceptible for weeks, and finally succumb to the very last exposure.

Our first case we can trace to Emporia, and from there to Wichita. We are satisfied that we have the disease corraled in our own city, and no fear of further spread of this disease within our county.

Respectfully, R. R. LOGAN, M.D., *Attending Physician.*

FINANCIAL AND PROPERTY STATEMENT.

EXPENDITURES OF THE STATE BOARD OF HEALTH,

FOR THE FISCAL YEAR ENDING JUNE 30, 1888.

The appropriation for said fiscal year for the expenses of the State Board of Health, and the Secretary, including the salary of the Secretary, was \$4,500. Classified statements of the expenditures of the Board during said fiscal year are as follows:

Expenses of members attending meetings of the Board, sanitary conventions, and State charitable institutions.....	\$954 86
Office rent.....	240 00
Postage.....	235 00
Express charges.....	110 65
Gas.....	5 40
Janitor for office.....	60 00
Shelving for Reports.....	7 30
Coal-shovels and dusters.....	2 85
Locks, and fixing of same.....	3 35
Book-case, and Webster's Unabridged Dictionary, for office.....	55 00
Dr. Reid Alexander, for chemical examinations.....	95 00
Paid J. K. Hudson, for hall rent for State Sanitary Convention, and copies of the Daily Capital.....	31 00
Telegrams.....	1 95
Paid State Printer for pamphlets.....	13 50
Clerical labor.....	131 50
Electrotype of Secretary's signature, and type-writing of manuscript.....	4 25
Secretary's salary.....	2,000 00
Balance, unexpended in the hands of the State Treasurer.....	548 39
Total.....	<u>\$4,500 00</u>

LIST OF BOOKS IN LIBRARY.

Books and other publications have been received by gift and exchange and placed in the library of the Board, during the year ending December 31, 1888, as follows:

- 1 volume, Eighth Annual Report of South Carolina State Board of Health. 1887.
- 1 volume, Annual Report of Health Department of the City of Baltimore, Maryland. 1887.
- 1 volume, Sixth Annual Registration Report of New Hampshire. 1885.
- 1 volume, Eleventh Annual Report of Wisconsin State Board of Health. 1887.
- 1 pamphlet, Report on Sanitary Inspection of Passenger Coaches. 1887.
- 1 pamphlet, Dangers in Gasoline. By John H. Kellog, M. D., Battle Creek, Michigan.
- 1 volume, Report of State Board of Health of Massachusetts, on Water Supply and Sewerage. 1888.
- 1 volume, Laws of Pennsylvania. 1881.
- 1 volume, Thirtieth Report of Vital Statistics of Vermont. 1886.
- 1 volume, Annual Report of State Board of Health of Missouri. 1887.
- 1 volume, Eleventh Annual Report of New Jersey State Board of Health. 1887.
- 1 volume, Fifth Annual Report of the City of Providence, Rhode Island. 1887.
- 1 volume, Fourth Biennial Report of Iowa State Board of Health. 1887.
- 1 volume, Geological Survey of Ohio. Volume VI.
- 1 volume, Tenth Annual Report of Connecticut State Board of Health. 1887.
- 1 pamphlet, Proceedings of Pennsylvania State Sanitary Convention. 1886.
- 1 volume, Seventh Biennial Report of Maryland State Board of Health. 1888.

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- 1 pamphlet, Proceedings of Sanitary Convention at Traverse, Michlgan. 1887.
1 volume, Seventh Annual Report of New York State Board of Health. 1887.
1 volume, Report of Patho-Biological Laboratory, University of Nebraska.
1 volume, Thirty-fourth Registration Report of Rhode Island. 1886.
1 volume, Nineteenth Annual Report of Massachusetts State Board of Health. 1887.
1 volume, Ninth Annual Report of Board of Health of the City of Atlanta. 1887.
1 volume, House Journal, State of Delaware. 1887.
1 volume, Report on Hygiene, New York State Board of Health. 1887.
1 volume, Fifteenth Annual Report of Board of Health, City of New Haven 1887.
1 volume, Third Annual Report of Board of Health, City of Newark. 1887.
1 volume, First Annual Report of Vermont State Board of Health. 1887.
1 volume, Third Annual Report of Maine State Board of Health. 1887.
1 volume, Sixth Annual Report of Indiana State Board of Health. 1887.
1 volume, Tenth Annual Report of Rhode Island State Board of Health. 1887.
1 volume, Sixth Annual Report of the Provincial Board of Health, Ontario. 1887.
1 volume, Second Annual Report of Ohio State Board of Health. 1887.
1 volume, Eighth Annual Report of New York State Board of Health. 1888.
1 volume, Fifteenth Annual Report of Michigan State Board of Health. 1887.
1 pamphlet, Proceedings and Addresses of Sanitary Convention at Manistee, Mich., June, 1888.
1 volume, Seventh Annual Registration Report of New Hampshire. 1886.
1 pamphlet, Report of the Sanitary State of the City of Montreal. 1887.
1 volume, Second Annual Report and Vital Statistics of the Pennsylvania State Board of Health. 1886.
1 pamphlet, Compendium of the laws relating to the public health and safety of the State of Pennsylvania. 1888.
1 volume, Second Annual Report of Vermont State Board of Health. 1888.
1 volume, Seventh Annual Report of New Hampshire State Board of Health. 1888.
1 volume, Forty-Sixth Registration Report of Massachusetts. 1887.
1 volume, Tenth Biennial Report of California State Board of Health. 1886-1888.

ANNUAL REPORTS OF COUNTY HEALTH OFFICERS.

The following is a list of counties from which annual reports of County Health Officers have been received. These reports should command your attention. Read them carefully, and give them a thorough examination, as they possess important and valuable information, and show evidences of faithful work:

Anderson.	Ellis.	Johnson.	Montgomery.	Sedgwick.
Chase.	Finney.	Kingman.	Norton.	Shawnee.
Clay.	Ford.	Labette.	Osborne.	Sheridan.
Cloud.	Garfield.	Lane.	Pawnee.	Sherman.
Coffey.	Graham.	Lincoln.	Phillips.	Thomas.
Comanche.	Greenwood.	Linn.	Pottawatomie.	Wabaunsee.
Crawford.	Hamilton.	Lyon.	Pratt.	Washington.
Davis.	Harvey.	Marion.	Rawlins.	Wichita.
Decatur.	Hodgeman.	McPherson.	Rush.	Wilson.
Elk.	Jewell.	Miami.	Russell.	Woodson.

COUNTY REPORTS.

GARNETT, ANDERSON Co., January 14, 1889.

J. W. Redden, M.D., Secretary State Board of Health—DEAR DOCTOR: The mortality among children the past summer has been very small; only one child died in Garnett from summer complaint. The more frequent cause of this disease is bad hygienic surroundings, bad diet, and uncleanness. Whooping-cough has been prevalent in this locality.

The general health of the county the past year has been very good. No epidemics or endemics. The County Commissioners are in sympathy with the sanitary work, and I think will offer more substantial aid this year than ever.

Our ice, milk and water supply is very good, but I think it could be improved. I think if an inspector could be appointed to look after meat, milk, vegetables, etc., it would change the condition of affairs very much.

There are 7,991 school children in the county, very few of whom have been vaccinated. I would suggest that those who have not, ought to be vaccinated before the spring term of school begins.

The following physicians and midwives have not registered:

G. D. Munger.....	Kincaid.	Jos. Slutz.....	Welda.
Dr. Mayer.....	Westphalia.	Mrs. C. Parrish.....	Lone Elm.
Geo. Vail.....	Greeley.	Mrs. Catherine Smith.....	Rech.
Dr. Stevens.....	Colony.	Mrs. R. C. Smith.....	Lone Elm.
T. J. Coulter.....	Colony.	Mrs. M. Young.....	Welda.
Dr. Glines.....	Garnett.		

A sanitary officer ought to be appointed for a year, at a salary that would insure good work, and by keeping up the office of sanitary inspector mould public opinion in its favor. When once the public become accustomed to it they will support it heartily.

Respectfully,

D. C. VAN STAVERN, *County Health Officer.*

COTTONWOOD FALLS, CHASE CO., January 17, 1889.

J. W. Redden, M.D., Secretary State Board of Health—DEAR SIR: I have the honor to submit to you this, my fourth annual report.

I am able to report an unusual good sanitary condition in this county for the past year. We have had no outbreaks of epidemic or endemic disease, only in one instance. At Elmdale, a small town on the Santa Fé Railroad, seven miles west of this place, diphtheria occurred in a family that had been living over a cellar which was wet and contained rotten cabbage and other vegetables; it was a very malignant type. Upon hearing of it, I requested the people by circular to meet me at the school house, and hear something of the dangers of the contagiousness of the disease; also of the necessity of quarantine. I had a very good house, and was listened to with much interest. I also read from the circular sent out by the Board of Health. I invited the local physician, Dr. F. Johnson, forward, and to my surprise he said it was a matter of grave doubt whether or not diphtheria was contagious; his argument seemed to be to undo what I was trying to do. However, upon consideration, I was not so much surprised, for he is the only physician in this county who has not registered, nor has he ever made a return of a birth or death; and by his acts, I conclude he is opposed to the law and rules regulating the sanitary condition of Kansas.

There occurred three deaths, all of a malignant type; there were half a dozen other cases of a mild form. There were a few cases of mild form of the disease in our town, but it was so well guarded it did not spread, and no deaths resulted.

I have been watchful of the sanitary condition of our towns and villages, and I believe great good has resulted from it; my efforts have generally been kindly received.

My condensed returns are very meager and unsatisfactory; some of our physicians have not made a return during the past year, and others did not make a single return until the last of December. Any health officer can readily see the embarrassment, and I for one call the effort on the part of the State to accomplish the end a *failure*. And unless our Solons during the present session enact laws and affix penalties, and by some way create an officer expressly to report delinquents, and relieve the local health officer of that part of his duty, I want no more to do with it as Health Officer. Few, if any, can be found who are willing to report his neighbor and incur his displeasure; it is not pleasant nor profitable. I think the State could be divided into districts of not more than six counties each, and an officer appointed expressly to attend to that business in them; also something should be done regarding our present law regulating pharmacists. There are many dispensing drugs in Kansas under the pretended registration law that are no more fit for it than I am fit for a preacher.

Our ice and milk are of the best quality, and our markets are well stocked with the choicest meats.

I am satisfied, could the law be enforced, the people of our State would in a very few years see the benefit arising therefrom, and would heartily and cheerfully in-dorse it.

I am heartily in favor of a law regulating sanitary affairs, also the vital statistics, and for one will say, let the weak points of our present one be so amended and strengthened as to accomplish effectually the end desired.

I am, very respectfully, your obedient servant,

C. E. HAIT, M.D., *County Health Officer*.

CLAY CENTER, CLAY CO., January 14, 1889.

J. W. Redden, M.D., Secretary State Board of Health, Topeka, Kas.—DEAR DOCTOR: With the exception of the epidemic of measles in the early part of 1888, the health of Clay county has been an average.

The vaccination rules have been but partially carried out. Many were vaccinated at the time there were a few reported cases of small-pox at different points in Kansas. In November quite a number were vaccinated on account of a lady who had varioloid, and whose four-year-old daughter had had small-pox, being quarantined at this place. This woman claimed that they had had the disease at the Sisters' Hospital, at St. Joseph, Missouri. Upon writing to St. Joseph, I found there was no such institution in existence. My explanation is, they had the disease somewhere where the people were either unwilling or unable to keep them a sufficient time, and started them out as soon as possible. There were a few scabs remaining on the little girl. Fortunately, no spread of the disease occurred.

No new physicians have come into the county in the year, and no new registrations.

There occur quite a number of mistakes in the list of physicians in the report of 1887; the corrections I send with my reports.

The approximate number of school children in the county is 4,000. I am unable to even approximate the number vaccinated this year, the number previously vaccinated, and the number never vaccinated.

We had an epidemic of measles in the early part of 1888. Estimated number of cases, 1,000. Number of deaths from this disease, 18—more than from any one disease; deaths from pneumonia, 24. Of these cases of pneumonia, quite a number were complicated with measles; measles being the primary disease. During the prevalence of the epidemic, the weather was quite changeable, on account of which, no doubt, much of the mortality depended.

The people are generally disposed to kindly observe the rules and regulations of the State Board. The Commissioners are favorable to sanitary work.

SUGGESTION I. Have the undertaker's death reports correspond precisely in size and form with the physician's, except the signature—"Undertaker," instead of "M. D." Perhaps in most cases the undertaker would be unable to get all the facts from the person sent for the coffin, still he could in most cases get the sex, color, single or married, nationality, where born, and how long a resident of the State.

SUGGESTION II. Have the birth, death and marriage returns returnable to the county health officer the first day of every month, instead of seven days after each particular case, thus making less trouble for those who make returns.

SUGGESTION III. Devise some method whereby our birth returns may be as complete as death and marriage returns. As now carried out the birth returns are very incomplete. Most physicians excuse themselves with one or the other of two excuses: (1) Returns are asked for, for which there is no remuneration; (2) The law in regard to the case cannot be carried out, or at least never has been so in this State. My judgment is, if these two excuses are met, or even the second one, our birth returns may become as complete as those of deaths and marriages. Have a law passed by which city boards of health might be swallowed up by the county health officer. Then, there being but one member of the board, complaints could be received and looked after at all times. With city boards of health generally there is trouble in getting the board to meet.

In reference to the "*Resolved*," the information so far as gathered, leads me to the following conclusion, viz.: The average county health officer is not prepared to intelligently report the condition of water, ice, milk, meat and vegetable supplies within his jurisdiction, hence, it would be better where such reports are needed that the work should be done by an expert, at the expense of the State, and his services should be furnished when so requested by the county commissioners.

Respectfully submitted.

S. E. REYNOLDS, M. D., *County Health Officer*.

CONCORDIA, CLOUD Co., January 12, 1889.

J. W. Redden, M.D.—DEAR DOCTOR: I am called upon once more to give you rather an unsatisfactory report of the condition of things in our county. Only a few of our physicians have reported during the last year just past, as you will see by my condensed report. I have no reports from Clyde, Miltonvale, Jamestown, or Glasco. Ministers, justices of the peace and our probate judge have failed to report, with a few exceptions, which I will give: Revs. Bushnell, O. Beisth, James Bays, and Bruner; justices, P. J. Miserly, B. R. Anderson, and R. Cleveland. I do not think that over one-fourth of the marriages have been reported, and not more than one-fifth of all the births; deaths, perhaps one-seventh reported. Now with the majority of physicians against us, what had I better do in the matter? If it is my imperative duty to report them, I will do so, yet I very much dislike to. It seems that something must be done, or the law is a dead letter.

The number of school children is about 6,000; perhaps about two-thirds attend the public schools.

There have been no epidemics within the last year, except as mentioned in the blank reports.

There is still very little inclination as yet upon the part of the people to observe the rules and regulations of the State Board of Health. I still think that a *specific law* in the direction of enforcement of the rules, would be a potent remedy for the trouble.

I still insist that it would be better if the law were made specific as to the salary of the county health officers, and that the salary be allowed according to the number of inhabitants in each county.

Would it not be better for the State Board to have all the marriage certificates and licenses printed together, letting the probate judge detach certificates and hand them to the health officer every thirty days, thus making the marriage returns quite complete?

In the matter of vaccination there has been comparatively nothing done.

So far as I can learn, the condition of drainage and purity of water and milk, meat and vegetables, are fairly good.

Hoping the present Legislature will do something to remedy the defects of the law as it now stands, I remain, Yours truly,

L. D. HALL, M.D., *County Health Officer.*

BURLINGTON, COFFEY Co., January 15, 1889.

J. W. Redden, M.D., Secretary State Board of Health—DEAR DOCTOR: There have been some thirty cases, with six deaths, of typhoid fever, reported during the past year; and three deaths from pulmonary phthisis. Malarial fever has been quite prevalent in some parts of the county, due, chiefly, I think, to the use of impure water. We have had no contagious or infectious diseases prevalent.

The general sanitary condition of the county, as well as of the public buildings, is good.

Yours truly, WM. MANSON, M.D., *County Health Officer.*

COLDWATER, COMANCHE Co., January 18, 1889.

J. W. Redden, M.D., Secretary State Board of Health—DEAR SIR: Herewith find my report for 1888, as complete as can be made under existing circumstances. Three physicians and one midwife have registered, only one making an annual report—the balance (five) totally ignoring the law in every particular; yet they have been duly notified by your circulars, which were promptly sent them.

The marriage report is complete—forty—as procured from Probate Judge. The birth report, from two physicians, is fifty-three, probably about one-third of the county. Ten deaths reported, yet I know of several others. Our undertaker

keeps no record. Some fifteen cases of typhoid fever, with two deaths, were reported in the southwestern part of the county. There have been no cases of epidemic or endemic diseases in the county to my knowledge.

Vaccination has been totally neglected. The sanitary condition of the county is excellent; with an abundance of running streams of pure soft water, and no stagnant pools, it could scarcely be otherwise.

The local board appears ready to assist in everything required. School children reported by the County Superintendent, 790.

My only suggestion is to make registration and reports compulsory, or let the whole thing go by default.

J. S. HOLLIDAY, M.D., *County Health Officer.*

GIRARD, CRAWFORD CO., January 14, 1889.

J. W. Redden, M.D., Secretary State Board of Health—DEAR DOCTOR: I herewith submit my report of vital statistics of Crawford county for the year 1888. It includes a report of all the births and deaths made to me as County Health Officer for that year, and a classified list of physicians and midwives who have registered during the year. No report of marriages is made, because no reports of marriages are made to me. Persons solemnizing marriages understand that there is no penalty attached to failure to report a marriage, so they take no trouble to observe the regulations.

The general health of this county is very good. The vaccination rules are not observed in the county. I have no way of knowing the number vaccinated during the present year, the number previously vaccinated, or the number never vaccinated. No outbreak of epidemic or endemic diseases has occurred during the past year.

I think there is a disposition to observe the regulations of the State Board. The County Commissioners show a disposition to aid the work in every way, and the better class of citizens favor sanitary work.

I have no suggestions to make, except that it would be desirable to have such legislation as would enable County and State Health Boards to enforce necessary regulations. Very respectfully,

GEO. W. MILLER, M.D., *County Health Officer.*

JUNCTION CITY, DAVIS CO., January 10, 1889.

Dr. J. W. Redden, Secretary State Board of Health—DEAR DOCTOR: I have the honor to submit herewith my third annual report as Health Officer for Davis county.

You will see by condensed returns that one hundred and twenty-eight births have been reported to this office during the year; this is far below the actual number. I find it impossible to get all the physicians to report births. Then many cases in the country have no regular medical attendant; others send for some old granny, who can neither read nor write, consequently no return is made. Many physicians think they should have a fee for gathering the information and making returns of births and deaths.

My condensed returns of deaths are made out entirely from the burial-case permits returned to me. My returns of deaths from physicians were too meager to entertain. My record of deaths is complete, and shows a mortality of one hundred and nine for the year. I am confident that if my birth record was as complete, it would show two hundred instead of one hundred and twenty-eight.

Scarlet fever prevailed quite extensively during the spring and summer; it was of rather a mild type, except in a few cases. Continued malarial fever prevailed quite extensively during the summer and fall.

The summer was dry, the ground-water reaching a lower stage than ever before since the settlement of the county. Dysentery prevailed quite extensively during the fall. Taking the year through, we have had more sickness than usual; and one of the principal causes, I think, is to be found in the low stage of water.

My returns of marriages are complete, including a groom of 75 with a bride of 15; this is a union of two extremes.

Our county and city are in a fair sanitary condition.

It will be a long time before you can convince the ignorant and superstitious people of this county that there is more virtue in cleanliness than in prayer as a preventive of disease.

There has been no physician registered since my last report.

Respectfully,

P. DOUGHERTY, M.D., *County Health Officer.*

OBERLIN, DECATUR CO., January 1, 1889.

J. W. Redden, M.D., Secretary State Board of Health—DEAR SIR: Inclosed herewith please find reports of marriages, births and deaths for the year 1888; also, list of registered physicians and midwives.

This has been rather an eventful year in regard to diseases. Early in the spring we had an epidemic of scarlet rash, which ran throughout the entire city, and a great number of cases in the country; during the fall, also had a few cases. It was very harmless in immediate effects, and in sequela: only one death occurred that could in any manner be attributed to the disease, and this was the case of a child; had a very severe attack of sore throat to begin with, and afterwards brain fever and congestion of the lungs; and although the rash appeared plentifully on the face, neck, and chest, it was difficult to determine the exact cause of death. Have had mumps, measles, and chicken-pox, but no fatalities.

In the early part of December, 1888, a young man came in from Denver, after a frolic out there of some four weeks. A few days after this he was found to have what was diagnosed as gonorrhœa, in its primary stage; and after being treated for five or six days, the symptoms having all disappeared, he was discharged. At this time temperature was normal, pulse 78, and entirely free from pain. Three days after the physician was sent for, and he was found to be covered with a papular eruption, which consisted of papules ranging from one-eighth to three-eighths of an inch in diameter, grayish in color, and surface smooth; no itching or burning sensation, no increase of temperature or other abnormal condition. About the third day the papules began to disappear, by first being depressed at the apex, and gradually sinking down, until only a dark red spot remained where the papule had been. After investigation, it was ascertained that he was *exposed* about four or five weeks previous to the date of the eruption, and although there was no primary lesion to be discovered it was diagnosed as "syphilitic eruption," and treatment according to the diagnosis began, and on the 26th of December two-thirds of the eruption had changed in character from the full gray papule to the dark-red spots. At this time further personal attendance was not deemed necessary, unless something new should develop; but instructions were left to continue treatment as heretofore. Three days thereafter he was so much improved that he went to several places in town, some five or six blocks distant. He contracted some cold, but nothing serious resulted from it.

On the 22d of December, a brother, who was attending school at Topeka, made him a visit, and from that time had all the care of him as nurse; and in nine days he was attacked with typhoid symptoms, and the physician (another one this time) treated him for typhoid fever. In five or six days he was attacked with the same kind of eruption as the first one. The old mother, who, before the arrival of the son from Topeka, had most of the care of him, was attacked with high temperature, increased pulse, and intense headache, and during one night was "flighty" the most of the time. The same physician who was treating the son for *typhoid fever*, began by diagnosing her case as *typhus fever*, but in from four to six days she also came

down with the same kind of eruption as the first one had. This was eighteen days after the first one came in from Denver. Still another brother, who with his wife and two children lived in the country, came in and spent most every day, and on several nights remained, and all slept virtually in the sick-room, as doors were open which communicated with two rooms. A chum of the first one called, shook hands, and helped to nurse him, and sat by the bedside for an hour or so; he was also attacked by the same disease. These patients are all doing well. There has been no itching or burning sensation at any time; no increase of temperature or other abnormal conditions reported. From the time that the first one was taken sick, about the 5th or 6th of December, until January 6th, when the two houses were put in quarantine, there were probably from fifty to seventy-five persons who called at the house. Some of them, ladies, made the beds and swept the rooms; others acted as night-watches, two each night; and none of all these have shown any symptoms of being sick, or ill in any manner. A family, man and wife, occupied a room of the house, adjoining the one where the others were sick, until the 6th of January, and neither of them, man nor wife, has as yet shown any abnormal symptoms. The physician who attended the first one, and while attending him took no precaution against it, has felt nothing of it.

The question arises. What is it? It has been proven so far beyond question, that it is not *contagious*. On the contrary, it has only affected those who came in *contact*, or sleeping in the same rooms, and this shows that it is *infectious*. Had it been *small-pox*, it seems that of all the ones exposed by merely calling and staying a short time, some one or other would have taken the disease. In all the cases of eruption there has been an absence of any itching or burning—no increase of temperature. May it not be of syphilitic origin, skin disease resulting? It has thus far been confined to the two houses. The father, an old man some sixty years old, has remained in the house all the time and has not taken it. The whole skin seems, after the papules have disappeared, to peel off.

Our country is new and vegetation scarce, excepting "buffalo-grass;" but as cultivation progresses and the sod is turned over, different kinds of grasses and weeds will spring up, and miasmatic gases, when this vegetation begins to decay, will cause diseases to assume a more malignant form. I do not think that any disease would be very malignant as an epidemic, but would appear in a mild form. We are living at an altitude of some 3,000 feet above sea level and the air is necessarily pure, and no noxious gases to contaminate the atmosphere.

The water has some ingredient that creates some functional disturbance of the liver and kidneys until a person becomes acclimated. Most of the cases of typho-malarial fever have occurred on the high divides, away from stagnant pools of water, and it is possible that the water in these "divide" wells, which are on an average of 150 feet in depth, may have something to do with this.

We have probably had over 100 cases of scarlet rash, but only one fatal, and that was complicated. Have had a considerable number of malignant sore throat, but no fatal results. Cannot determine the number of typhoid-fever cases; three have died. Four deaths from pulmonary phthisis. Diarrheal diseases in children have been very prevalent, especially during the hot weather; but in many cases can be attributed to teething as a complication. It is difficult to determine the exact number of deaths, as many children die in the country, and no report is made, as no medical attendance was to be had. Very warm weather, teething, change of climate in those whose parents have moved into the county since birth of children, have been the more frequent causes of these diseases.

In the early part of the present year we had an epidemic of scarlet rash, or else

an exceedingly benignant type of scarlet fever, as no deaths occurred, excepting lung or throat or brain complications set in. I do not think it was scarlet fever, as that disease makes many mounds in the cemeteries.

Respectfully, A. W. BARITEAU, M. D., *County Health Officer.*

GRENOLA, ELK CO., January 8, 1889.

J. W. Redden, M. D., *Secretary State Board of Health, Topeka*—DEAR SIR: I this day forward by express to you a concentrated report of deaths, births and marriages. The deaths, as given on Form 20, A, B, C, and D, show the number reported by the physicians and placed on record by myself, numbering 37 in all. The number of deaths sent on the card is taken from the reports of the undertakers, which is nearer the truth, the number of which is 44. I am persuaded that the number of deaths is somewhat greater than that reported by the undertakers. The number of births is nearer correct than the deaths given; yet I am sure that they have not all been reported. The marriages are about correct, for they were taken from the Probate Judge's record. The Probate Judge will not send to me any reports whatever. I sent him the blank books, with a copy of your letter to me to request him to be governed by your instructions, and send me once a month his report. and as he did not comply with the request, I went and saw him about the matter. He said that it was no part of his business to make such reports, and he had lost the blank books which were to be used for the purpose; at least they could not be found by me, and he would not help me find them.

The County Clerk as well as the Commissioners are willing to do anything they are asked to do.

There was no attention paid to the rules of vaccination. I have been unable to get any knowledge of the number of children who have been vaccinated, or those who have not been vaccinated; in fact, I cannot possibly get *any* information that is reliable, unless I go personally and visit all the schools of the county, while in session, and learn for myself. The Superintendent could get it if he would. I have urged him to do so, but he says he cannot, because of the press of business. The number of school children in Elk county (approximately) is: Males, 2,633; females, 2,542; total, 5,175.

There has been no epidemic of any kind the last year. The diarrheal diseases have been endemic in some portions of this county, and sporadic in others, and were hard to treat—more so than usual; yet it was fatal in but few cases. On the whole. I can say that this last year has been the healthiest year of Elk county; there are no natural causes for sickness in this county. It is well drained, and supplied with streams of good, clear water.

There are several physicians in this county who refuse to honor the rulings of the State Board of Health. The law has become a bore to the community, and especially to some of our physicians. I will venture a suggestion, *i. e.*, that some one near Topeka bring suit against a physician who is able to carry it up to the Supreme Court and test the matter; for it is generally believed in this county that no one has to pay any attention to the law or rulings of the Board of Health. If there is not a test made of some one soon, we who are working to secure a good sanitary condition will become a laughing-stock in society. Our towns are all small, consequently we have no city health officers nor sanitarians. The physicians and citizens think that the resolutions of last September might be of value to some counties in the State, but are not needed for Elk county.

There have been six cases of measles, one of scarlet fever, seven of cerebro-spinal meningitis, thirty-five of diphtheria, eighty of whooping-cough, twenty-nine of erysipelas, eighty-nine of typhoid and malarial fevers, five of puerperal fever, one hun-

dred and fifty of diarrheal diseases, eight of consumption; accidents and other diseases, eight. Forty-four deaths have resulted from these diseases, as follows: One from scarlet fever, two from cerebro-spinal meningitis, one from diphtheria, one from whooping-cough, one from erysipelas, nine from typhoid and malarial fevers, two from puerperal fever, fourteen from diarrheal diseases, four from consumption, two from acute lung disease, one from accident, and six from other diseases. Of these, seventeen were under five years of age. There have also been reported seventy births and ninety-five marriages.

The physicians should urge greater care in the feeding and cleanliness of children, especially during the hot season.

The general sanitary condition of the county and public buildings is good.

Respectfully submitted. R. C. MUSGRAVE, M.D., *County Health Officer*.

HAYS CITY, ELLIS Co., January 19, 1889.

J. W. Redden, M.D., *Secretary State Board of Health*—DEAR SIR: It is with regret that I inclose my report for the year ending December 31, 1888. No data are obtainable, and only a few of our physicians have reported births and deaths. There were only eleven deaths reported to the County Clerk, while the death-rate has been very large the past four months, from malarial fever. Again, there are no data of births from Catherine, Herzog, Walker, Lookout, Wheatland, and Hamilton townships of this county. The law requiring the reporting of births and deaths should be enforced. At least, to my knowledge, 150 children were born in the above-named townships. How many have died, is only known to the parish priests. Ellis county has a large German-Bulgarian population, who only report to their priest.

We have in the county 3,556 children who attend schools.

The towns in the county are in good sanitary condition, especially Hays City and Ellis. Drainage is natural and perfect.

Owing to the prolonged dry weather many wells gave out, and the result was the appearance of malarial fever in different forms.

I would respectfully suggest that the law be enforced compelling registration of births and deaths.

I am, sir, yours very respectfully,

H. B. KOHL, M.D., *County Health Officer*.

GARDEN CITY, FINNEY Co., January 16, 1889.

J. W. Redden, M.D.—DEAR SIR: You will find inclosed herewith my annual report, gotten up to the best of my ability, considering the difficulties under which I have labored. The registration of physicians I was compelled to take partially from the book kept for that purpose at the County Clerk's office, and partially from actual canvass. At least two of those whose names appear on record are not graduates, and two are here in active practice who have not registered at all. I retain the blank for contagious diseases for a day or two, for time to look up returns, a record of which has not been kept.

Yours respectfully,

F. DULIN, M.D., *County Health Officer*.

DODGE CITY, FORD Co., January 12, 1889.

DEAR SIR: In submitting to you the inclosed tabulated returns of the vital statistics for Ford county, we take pleasure in assuring you of their comparative accuracy and completeness. Nearly all of those from whom we have to obtain returns, have cheerfully furnished the same in the manner required by law, and our county is not yet so densely populated as to make the work of special difficulty.

Referring to the mortality table, we notice a comparatively large number of children's deaths ascribed to cholera infantum, whereas actually very few cases of that disease occurred; physicians here, as elsewhere, generally apply that term to

any death in which diarrhea and faulty nutrition were previous symptoms. The proportion of infants' deaths to births, twenty-five to one hundred and forty-nine, exclusive of still-births, while very low as compared with many sections, still shows a waste of human life which, we should think, could be greatly lessened by intelligent care. That almost half, thirty-six in eighty-four, of our deaths should be of children under two years of age, does not argue well for the fathers and mothers of our day. We are also meeting with some deaths from phthisis among those who come here for the cure of their disease, but too late. Zymotic and contagious diseases, except the so-called cholera infantum, have occurred only in a few isolated cases, and have in no instance spread to others.

By referring to our report of last year, it will be noticed that 1887 was a year of marked progress in sanitary matters, as well as of material advancement, and we are pleased to state that the varied and important matters which have received our attention have been persistently followed up during the year past, until we are not ashamed to compare our county with any in the State in its healthfulness, cleanliness, and progress in sanitary science. Our water and ice supply is of the very best; our markets are supplied from neighboring farms in meats and vegetables, of which there has been no cause for complaint. The milk supply has not been thoroughly investigated, owing to the absence of complaints, and a question as to our authority in the premises.

Our public buildings are not overcrowded, and our school population is about 2,600, of whom about 2,300 are enrolled in the public schools and at the Presbyterian College of this city. Vaccination of all exposed children was thoroughly enforced last winter, and will be maintained during the present winter.

We have fourteen practicing physicians, and six professional midwives; but nearly all have failed to register. The names will be sent at a later date, as they have as yet failed to report their Alma Mater and other data. A full advertisement of the public health law will be made in the county paper this year, and we will expect more careful compliance with the same hereafter.

Very respectfully yours,

T. L. McCARTY, M. D., *County Health Officer.*

RAVANNA, GARFIELD Co., January 10, 1889.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I have the pleasure of making my second annual report as Health Officer of Garfield county, for the year ending December 31, 1888. My returns of marriages, births and deaths are transmitted herewith, made out on the proper forms.

The sanitary condition of Garfield county during the entire year has been exceptionally good. Two physicians who registered early in the year, as also several others actively engaged in the practice of medicine, having patiently waited for patients, finally lost all patience with our health—if not wealth—struck out and left for other fields of labor. Robert Burdette's medico-theological man, I imagine, would say of them. "As a flower of the field, so he [the Doctor] flourisheth, for the [Kansas] wind passeth over him and he is gone, and the place thereof knoweth him no more."

We have at present but three practicing physicians in the county, and they, too, would do much better by returning to their father, for evidently there is no fatted calf for them in this *desperately healthy* country.

I am informed that certain women are engaged in midwifery, but none have complied with the law and registered.

We have 950 school children. Vaccination has received no attention thus far.

With 22 marriages, 29 births, and only 4 deaths and 2 still-births, we close our books much encouraged by the improvement over the preceding one.

We had but two prisoners, well taken care of in the jail of an adjoining county, as we have no jail in this county.

Garfield county enjoys a mild, healthy climate; its atmosphere is dry; the altitude is about 2,700 feet above the level of the sea. The summer's heat is tempered by breezes; the winters are short. The water is good, and supplied by springs and wells in abundance.

In 1873 a woman died of small-pox. The funeral, for some reason unknown to me, was a public one. The body was carried into the church of which deceased had been a member. At the close of the services, the members and friends took a last look at the remains, which lay in the open coffin. The result was that a large number of the members were taken with small-pox, and many died. In the same year my own family received a letter which had come 125 miles by mail. This letter had been written in a room in which lay a body just having died with variola confluens, (two other deaths having occurred a week or two before this.) On the eleventh day after we received the letter, three of my family came down with the confluent type of the disease, and it went through the family of seven persons; three deaths. Soon we heard of other cases in town, not in our immediate neighborhood. The disease spread over the town, and many deaths occurred.

Again, in 1873 a young man died in St. Louis, Mo., with small-pox. His clothing was boxed and sent by express 100 miles in the country. Little more than a week after his parents received the clothing one of the remaining sons came down with small-pox. This was the center of some 80 cases. Many deaths occurred.

The Board of County Commissioners, having the present and future welfare of our people at heart, give me every encouragement and assistance. The physicians, although differing in medical practice, have joined hands in the good work of improving the already good sanitary condition of the county. It is but proper to state, that the officers, as well as the people of the county, recognize the importance of our work for the continuous development of the county and the true happiness of its people.

Ere closing this report, I would call the attention of the medical fraternity once more to the fact that this county, for healthfulness, "takes the cake." We desire to have your friends come and make their homes with us, in the beautiful county of Garfield. Respectfully yours, HENRY C. SUESS, M.D., *County Health Officer*.

MILLBROOK, GRAHAM CO., January 1, 1889.

J. W. Redden, M.D.—DEAR DOCTOR: In submitting to you my annual report of the condition and public health of this county for the year 1888, I would be glad to be able to make said report more complete and interesting. No records of any kind were turned over to me for the months preceding my appointment, in April, 1888, by the retiring County Health Officer. The difficulty of getting full returns from resident physicians since, makes the report unsatisfactory and incomplete. The birth, death, and marriage returns, as shown by the yearly report, are much too low. The yearly report is based upon the actual returns from physicians, and will not tally with the card statements of each month, which are much more accurate; such statements were made up of births and deaths which came to my knowledge from other sources than those made by physicians merely. It takes some time in a border county to get things in good working order. If I retain the office another year, I am confident of a better showing of the actual facts.

The topographical features of Graham county do not differ materially from those presented by the surrounding counties. Elevation above the sea, about 3,500 feet. There are three great "divides," extending east and west, formed by the Saline river in Trego county on the south, and Brush creek; second, that lying between

Brush creek and the south fork of the Solomon river, which runs through the middle of the county; lastly, that lying between the Solomon and Bow creek on the north. There are several other small water-courses without water, and waterless creeks, with innumerable smaller "divides" and pockets leading into the common valley. The Solomon is from four to ten rods wide, having a depth of water of almost two inches. The channel would drown a Jersey mosquito, if well ballasted with rock. The river is frequently licked dry by hot winds. Moisture seems to have a grudge against the soil for long periods. This dryness is not wholly confined to the soil. Selah!

The weather is subject to sudden and extreme changes of temperature. In the early spring and summer appalling storms of wind with sometimes rain sweep over the country. During the winter months it is not uncommon to have a hot sun, at the same time a certain icy or undercurrent of cold air being noticeable, conditions favoring congestions and inflammations. Pneumonia and tonsillitis follow in successive crops. Ulcerative tonsillitis often assumes a malignant form closely resembling diphtheria, for which it is often mistaken. Bowel disorders have carried off many children. Improper diet for infants must stand as the prime cause for an alarming death-rate here as well as elsewhere. I make this statement, that women bear children because it is natural for them to do so; for if to bear children depended upon knowledge, but few children would be born. A babe less than six months of age that has the audacity and impudence to live after being continually fed upon pork rinds, bacon, hog fat, and hominy, deserves the severest censure of its nurse. Long-continued drouths favoring low water in wells is, without doubt, another factor of the causes of dysentery, diarrheal diseases, and typhoid fever. Water from some of the wells would give the dysentery to a fire-brick. On account of expense or a 2x4 almanac knowledge, many are in the habit of treating these bowel troubles with patent medicines or home remedies; sometimes with success. By the workings of this method, physicians often have a chance to "father" a funeral. Following closely in the wake of summer complaint, came typhoid fever. In the fall of 1888, like the preceding year, this disease first made its appearance at Hill City, on the opposite side of the Solomon from Millbrook, about two and one-half miles; apparently, these towns look much closer. Hill City is on an eminence, while Millbrook is located on the second bottom of the Solomon valley. The water supply of Millbrook is constant and never-failing.

March 10th, 1888, the county records were taken from Millbrook to Hill City. For several years this county-seat "racket" has been waged with great vigor and bitterness between these rival towns; the uncertainty retarded growth and improvements. Hill City had but two wells, and those chiefly in shale rock. To offset this deficiency, water was hauled in barrels (and is yet) from what is known as the Duck Pond, located three-quarters of a mile directly south of that town, near the river. This pond is supplied by springs, and has no visible outlet. It has frequently been used by both towns as a *bath tub*. There is a green scum around its border such as is seen in ponds generally. To a considerable extent the water from this fever incubator has been used by the people of Hill City to drink, and is yet. Their ice supply is also obtained chiefly from this pond. It is not at all singular that I should be able to trace a large number of cases directly to the water supply from suspected wells, the water being low, murky, favoring the accumulation of a muddy slime on the bottom and sides of the bucket.

The fever first appeared there about the middle of August. A number of cases at Fremont, fourteen miles west, later on; population of one hundred. Also at Bogue, a town not yet four months old, some four cases; one death. Nicodemus reports a few cases, with two or three deaths; population about two hundred, mostly negroes.

I have not heard of any case outside of a radius of six miles from any of these towns. Millbrook has had four cases, and one death. I am unable to state the number of cases of this fever at Hill City, but would be safe in putting the number as high as fifty, and a proportionate number of deaths; population now about five hundred. The population of Millbrook was about the same last March; since that time, however, Hill City has enjoyed a "boom," and has grown rapidly, while Millbrook has become beautifully less. The sanitary condition of both towns is the same. The water theory may account for much of the sickness; certain it is, there has been an element at work over there, from which Millbrook has been nearly exempt. The reckless disposal of evacuations has not helped their case any, and may add to their distress another fall.

Since March a number of wells have been bored, the water coming through a stratum of coarse gravel and sand, and apparently of good quality.

The construction of a branch of the Union Pacific Railroad through the Solomon valley gave the county a large transient population, and increased the birth and death-rate. One child died with whooping-cough; the disease spread in a mild form so far, and has resulted in one other death. Consumption has claimed a number; nearly all of them were brought here from distant points. Persons with weak lungs should provide themselves with a galvanized lining before venturing a residence.

Three papers having the largest circulation willingly published the pamphlets upon typhoid fever, diphtheria and scarlet fever. Printed matter always has more weight with the masses than the wisest spoken words. The publication and distribution of those small books ought to and will have a salutary and beneficial influence. Some people never read anything. Nothing but the severest afflictions will open their eyes in place of the mouth.

In June, 1888, the number of school children in the county was 2,339. The County Superintendent estimates the number at present to be about 2,000. A large number of families moved away during the fall. Of this number, I am informed that some 5 per cent. have been vaccinated. None have been vaccinated this past year.

I sent a circular letter to all physicians in the county requesting them to give the number of cases of typhoid fever occurring in their practice for the fall and winter of 1888. Dr. E. M. Brown, of Fremont, Kansas, reports thirty-four, and from other sources of information, one hundred cases will hardly cover the number. Out of this number there have been from twenty to twenty-five deaths, although the report shows only twelve. I *know* some physicians have failed to report all their deaths—to cover up as far as possible, I presume, the mortality of a certain town. I am quite satisfied that some other element than impure water merely must be looked for as a cause or causes of this disease.

The county now has a new court-house 60x60, and a new jail adjacent. The jail has all the modern appointments.

I shall be pleased to send you as soon as I can get returns from the Probate Judge, his report of marriage permits for the year 1888. Like the rest, it will be incomplete. Very truly yours, E. C. LOOMIS, M.D., *County Health Officer*.

EUREKA, GREENWOOD CO., January 7, 1889.

J. W. Redden, M.D., *Secretary State Board of Health*—DEAR SIR: Inclosed find annual reports for the year ending December 31st. 1888, comprising report of marriages, births and deaths; also a list of the registered physicians and midwives that I know of in the county.

The number of school children in the county I am unable to give now, for the reason that the County Superintendent of Schools is out visiting schools in the county.

About vaccination, I have no report to make, as no report has been made to this office.

In relation to the reports of physicians to this office in regard to births and deaths: they are not lived up to as they were in the first operation of the law, yet no criminal action has been instituted against any party; and the law should be so amended that it could be enforced in a spirit of equity.

There has been no epidemic worth mentioning. During the past year the health has been good—unusually good for this county.

There have been some sixty cases of typhoid fever, with eight deaths, during the past year. Diarrheal diseases of a mild type, among children, have prevailed to some extent, and fifteen deaths from said disease have been reported. The most frequent causes of this disease have been teething, sudden change in weather, and change in food. Measles of a very mild type has prevailed to some extent, but no fatality from it has been reported.

The sanitary condition of the county is good. No complaints have reached this office, although some of our cities have had a little trouble; otherwise society has moved along smoothly.

Very respectfully,

F. W. WATSON, M.D., *County Health Officer.*

SYRACUSE, HAMILTON CO., January 15, 1889.

J. W. Redden, M.D., Secretary State Board of Health, Topeka—DEAR SIR: Here-with I submit my brief annual report. Our only trouble in this locality has been a few cases of mild remittent fevers. It has been very healthy in this county this season, only a few cases terminating fatally; of which I could get no definite account.

I have the returns of a few marriages, but only one minister could be induced to make returns.

Because of the unsettled state of our county for the last year, it is impossible to give any definite account of births and deaths. The only returns I could make would be my own—all other physicians refusing or neglecting to make reports. I have used all my energy to induce them to conform to the requirements of the law, but it was of no use. Our county seat is now settled, and I am in hopes we can get some unity of action and have a full and complete report for the ensuing year.

Our water is good, our climate excellent for health, and there are no direct causes for any form of disease. Catarrh is our prevailing trouble in fall and spring. I do not know of a case of sickness in the county at the present writing, and I am well acquainted and have reason to know if there were.

Respectfully,

L. S. DOWNS, M.D., *County Health Officer.*

NEWTON, HARVEY CO., January 1, 1889.

J. W. Redden, M.D., Secretary State Board of Health, Topeka, Kas.—DEAR DOCTOR: Inclosed you will find condensed returns of births, marriages, and deaths. The returns from the marriage and burial-case permits are, I think, quite exact; but those from births and deaths are very misleading. From the undertakers I have received two hundred and ten burial-case permits, while from death returns I got forty, notwithstanding all the threats published in the county papers.

The year 1888 in some respects has been quite eventful. We began the year by trying an experiment with small-pox; had about thirty cases of discrete small-pox and varioloid; all in a very mild form. One child, aged four years, died on the fourteenth day of his sickness. We enforced strict quarantine as soon as its whereabouts became known. It aroused every one to vaccination, and it has been pretty generally observed throughout the county. The year, taken as a whole, has been very healthy. We have had a very few cases of mild scarlet fever, without any

deaths. At Sedgwick, Halstead and Burrton, there have been quite a number of cases of diphtheria, or diphtheritic membranous croup; seemed to be infectious more than contagious. We have had five deaths reported from it. As for typhoid fever, we have had very few cases, and very small death-rate. The diarrheal diseases among children this year have been very mild, and only a few cases comparatively.

To sum this report up, I want to say the health of the county has been very much above the average. We suffered from a scarcity of water during the drouthy season, but don't know that any bad effect can be directly attributed to it. I am glad to say our water supply in the future will be No. 1.

The resolution passed by the State Board of Health meets the favor of all the sanitarians I have talked with.

Very respectfully,

MAX MILLER, M. D., *County Health Officer.*

JETMORE, HOEGEMAN Co., January 15, 1889.

J. W. Redden, M. D., Secretary State Board of Health, Topeka—DEAR SIR: My annual report is herewith submitted. The few cases of typhoid take the lead. Four cases were in one house, a hotel. There had been cases in the house during previous seasons, and I do not think due care was taken to disinfect. The well was in the kitchen, and had no special protection against surface-water; in fact, there had been a sink in the kitchen with a spout that carried waste-waters just through the wall. The water closets were, with the ordinary earth pits, 40 or 50 feet from the well. As the nature of typhoid contagion is too well understood to need discussion here, I would simply offer a resolution that we instruct the public more thoroughly in disinfection and disposal of the stools; also urge them to avoid suspicious water or ice. Also, whenever we have an opportunity, lend our advice on the locating and finishing of wells.

The health of the county has been good. The vaccination rules have not been observed, though a few were vaccinated during the year.

We have had no new registration of physicians or midwives this year, but several have left the county; none came in.

We have about 1,200 school children in the county. I have not ascertained the proportion that have been vaccinated.

There seems to be no opposition among the people to the rules of the State Board of Health. The County Commissioners give reasonable encouragement to the work.

For improving the general sanitary condition, I would suggest a proper system of water works, and avoiding the use of ice in a way that any part of it will enter the alimentary canal. While water is naturally good enough, we cannot be sure that any water is impure until the damage is done.

Yours truly,

M. F. ROLENS, M. D., *County Health Officer.*

MANKATO, JEWELL Co., January 22, 1889.

J. W. Redden, M. D., Secretary State Board of Health—DEAR DOCTOR: I send you by mail to-day my annual report for the year 1888. There have been reported to this office seven cases of scarlet fever, and one death from it; thirty-five cases of diphtheria, with twelve deaths; one hundred cases of typhoid fever, with twenty-three deaths; ten deaths from pulmonary consumption; about two hundred cases of diarrheal diseases in children, with thirty deaths. The chief causes of the latter disease have been improper feeding and extremely hot weather. The leading cause of typhoid fever has been impure water, the wells being very low and the water impure.

Whooping-cough has prevailed in some localities, but of a mild type.

We had a case of malignant scarlet fever and one of malignant diphtheria in Mankato. We quarantined both families, and kept all parties who had been exposed at their own houses. It has now been about eight weeks since these cases occurred, yet there have been no other cases developed from them. If we had not used the above precautions, we are satisfied that both scarlet fever and diphtheria in their most malignant forms would have been general in Mankato and the surrounding country, and many deaths would have resulted from them. The case of diphtheria died. The general sanitary condition of the county and public buildings is good.

Yours truly,

WALTER CREW, M. D., *County Health Officer.*

OLATHE, JOHNSON CO., January 14, 1889.

J. W. Redden, M.D., Secretary State Board of Health—DEAR DOCTOR: Inclosed herewith please find report of births, deaths and marriages for the year ending December 31, 1888. I believe the reports of births and deaths have been generally sent in to me by every physician in the county except one. True, some were very slow in reporting, thus greatly obstructing the work of the health officer. The law requiring the report of marriages has been wholly ignored; hence, the meager report, which I had to pick out of the Probate Judge's records.

There have been no reports of vaccination. I have furnished blanks to some who called for other blanks, but I think that duty has been entirely neglected.

According to the census of the last school year, there were of school age: males 3,049, females 2,963; of that number there were enrolled in school, males 2,321, females 2,209. Teachers—males 58, females 57.

Public buildings: The county infirmary is located on a farm owned by the county, about three miles north of Olathe. The house is a miserable one. At the present time there are eleven inmates—seven women and four men. Their care and maintenance are reasonably good; the gentleman and lady in charge do all they can to make the inmates comfortable. The court-house is a stone building of ancestral age; but a new one of modern style and convenience will be commenced this spring. Our jail!—what shall I say of it? Well, it ought to be a terror to evil-doers, and the two or three who are in it now will not be likely to come back to this county until we get our new jail built next summer. However bad these county buildings may be, we have one of which we are justly proud—the State Institution for the Deaf and Dumb. It is grand in its external appearance, and superb in its inside management and work. Everything moves in it, as it were, by clock-work; all seem to know their work, and do it well.

The following true copy may interest the reader:

KANSAS STATE BOARD OF HEALTH.—PHYSICIAN'S CERTIFICATE OF DEATH.

STATE OF KANSAS, JOHNSON COUNTY.

1. Name, Helen Hawthorne Miller; sex, female; color, white.
 2. Age, 90 years, 7 months and 11 days.
 3. Date of death, July 14th, 1888; hour, 5 P. M.; widow.
 4. Nationality, and place where born, Scotch—Calmonell, Ayrshire, Scotland.
 5. How long resident in this State, 30 years.
 6. Place of death, Lexington township, Johnson county, Kansas.
 7. Cause of death, old age; complications, bilious diarrhea.
 8. Duration of complication, 10 days.
 9. Place and date of burial, DeSoto cemetery, July 15th, 1888.
- Dated at DeSoto, August 5, 1888.

(Signed) W. M. MARCKS, M.D.

Residence, DeSoto, Kansas.

There were ten deaths reported from typhoid fever, (two in one family,) and six deaths reported from consumption. We have had no general outbreak of any epidemic during the past year, and but few cases of infectious disease. I am fully convinced, from many years' experience in the treatment of epidemic and infectious

diseases, that they can be very much controlled by isolation, disinfectants, germicides, and the necessary absolute quarantine. A strict enforcement of the laws will greatly improve the sanitary condition of the county.

During the spring months of 1888 there was a disease that prevailed generally in the public schools of this city; said disease was called rotheln, or German measles. No one died, either from the disease or from fright.

One more item, and I have done: I had forgotten to report the still-births, because of not having a proper book or place in which to register them. During the entire year there were fifteen cases reported—ten males (one colored); five females (all white). The number seems large; but judging from the periods of utero-gestation, I am satisfied there was no criminality connected with any of them. There were two at five months, four at six months, four at seven months, three at eight months, and two at nine months.

Will say in regard to that September resolution, it is generally thought that the duties required therein would take far more time than any physician practicing medicine for a *living* could give to the work. It would require a salaried officer.

Yours truly, C. G. MCKINLEY, M.D., *County Health Officer.*

KINGMAN, KINGMAN CO., January 26, 1889.

J. W. Redden, M.D., Secretary State Board of Health—DEAR DOCTOR: Herewith I submit my annual report for the year 1888. One case of scarlet fever has been reported to this office; 10 cases of diphtheria, and 1 death; 10 cases of typhoid fever, with 4 deaths; 6 deaths from pulmonary consumption, and 1 death from diarrheal diseases in children.

We had very few cases of the last disease during the year, and even those were of a mild type. We have very pure water, and our city has been kept in a very clean condition. These causes acted very materially in lessening the prevalence of the latter disease. The streets, alleys, yards and vacant lots should be kept free from impurities and deposits. All vaults, cess-pools and out-houses should not be constructed within one hundred feet of wells and springs, and kept in a good sanitary condition.

Our city and county are in good sanitary condition, and as a consequence the general health has been remarkable; no epidemics and very little sickness of any kind has prevailed. We had small-pox in this county last year, but I had all clothing used by the patients burned, and the houses thoroughly disinfected; and as a consequence we had no spread of the disease, but it was confined to the first cases.

Yours truly, E. W. HINTON, M.D., *County Health Officer.*

OSWEGO, LABETTE CO., January 15, 1889.

J. W. Redden, M.D., Secretary State Board of Health—DEAR SIR: Herewith I submit my annual report. There have been nine cases of scarlet fever, two of whom have died; six cases of diphtheria, and four deaths from it; fifteen cases of typhoid fever, and four deaths; fifteen deaths have been reported from consumption, and six from diarrheal diseases in children. The most frequent causes of "summer complaint" are improper diet, heat, and malaria. Typhoid fever has been a rare disease in this locality until this year, when it has been quite common, showing that the county is coming under the influence of the conditions which produce this fever; unhygienic surroundings and polluted drinking-water are the most potent causes of the disease.

The ordinances of our cities and towns prohibiting nuisances might be more effectually enforced.

The sanitary condition of the public buildings and the county generally is very good. Respectfully, E. E. LIGGETT, M.D., *County Health Officer.*

DIGHTON, LANE CO., January 5, 1889.

J. W. Redden, M.D., Secretary State Board of Health, Topeka—DEAR SIR: Inclosed you will find partial report of Lane county for the past year.

It is very incomplete, partly for the reason that I was appointed to the office so late in the year, and partly for the reason that some of the persons who should send in reports fail to do so. The Probate Judge has failed to make any returns of marriages whatever. Not half of the deaths have been reported, and a not much larger proportion of births.

There were two cases of typhoid fever reported, and one death. There has been one case of scarlet fever in the county. The contagion of this case was introduced, I am satisfied, by a gentleman visiting the family who had been in, and came directly from, a family living in the eastern part of the State where they had scarlet fever. This case developed last month. Have used strict precautionary measures and quarantine, and so far no new case has developed from it.

This has not been a sickly season in Lane county. We have had no epidemics of contagious or infectious diseases.

I expect to present a much more complete and satisfactory report next year.

Very respectfully yours, F. L. ROWND, M.D., *County Health Officer.*

LINCOLN, LINCOLN CO., January 15, 1889.

J. W. Redden, M.D., Secretary State Board of Health—DEAR DOCTOR: I send you by mail to-day my annual report of births, deaths, and marriages. There have been three deaths from typhoid fever, fourteen from diarrheal diseases, nine from pulmonary consumption, and nine from pneumonia and bronchial affections. Of the nine deaths from consumption, eight were females and one male; and of the nine dying from pneumonia and bronchial affections, six were males and three were females. It would be interesting to know whether the same proportion in the death-rate from these diseases exists in other parts of the State.

We have had no epidemics or endemics in this county during the year. The general sanitary condition of the county and public buildings is good.

Very truly yours, HENRY M. HALL, M.D., *County Health Officer.*

MOUND CITY, LINN CO., January 10, 1889.

J. W. Redden, M.D., Secretary State Board of Health: I herewith hand you my annual report of births, deaths and marriages in Linn county for the year 1888. I am glad also to state that we have had no epidemics in the county, so far as I can learn, and very few deaths from contagious diseases. Linn county physicians take more interest in death and birth returns than heretofore; and yet the much larger number of burial-case permits returned show that some of the doctors neglect to make their reports fully. Our Board of County Commissioners are willing and ready to carry out the law in this matter, and yet feel that if the State law is not made more complete and compulsory, that Linn county is making useless expense, if other counties do nothing, and fail entirely, as some of them are doing, to enforce the returns of the vital statistics. They freely express the wish that the law be made stronger, or stricken out entirely, and I concur with them fully.

We have thirteen paupers in the poor-house, six males and seven females; five of these are insane people, and are unable to receive the care such unfortunates should have. The State should certainly make ample provision for incurable insane persons. In no other way will they get proper attention.

Compulsory vaccination amounts to nothing in this county as yet. I am unable to get any information as to how many have or have not been vaccinated, either among adults or school children.

Two deaths have been reported from scarlet fever, one from diphtheria, seven

from typhoid fever, eleven from consumption, and seven from diarrheal diseases in children. We have had no epidemics in the county.

The general sanitary condition of the county and public buildings is good. Linn county is healthy.

We have an empty jail.

I send you a list of physicians registering in 1888. Only one, that I know of, is practicing in the county who is not registered.

We have good school children in Linn county.

Respectfully,

IRA E. COE, M.D., *County Health Officer.*

EMPORIA, LYON CO., JANUARY 14, 1889.

J. W. Redden, M.D., Secretary State Board of Health—DEAR DOCTOR: Being unavoidably absent on a western trip, accounts for the delay of this my second annual report. Comparative health has prevailed during the past year. Scarlet fever and diphtheria in some localities appeared in an endemic form; the same might be said of typhoid fever (so called). Only a few cases of scarlet fever were of the malignant type; a large majority was of the anginose, and quite a number of the simplex form. Few deaths in comparison to the number affected by it; the same may be said of diphtheria; but owing to a free use of disinfectants and a rigid quarantine their spread was prevented. The physicians of Emporia are entitled to credit for their efforts to prevent these diseases from spreading; and I presume in other parts of the county as well. By a reference to the condensed report of deaths, it will be seen that the number of deaths from these diseases occurred in the order named.

There were only two cases of small-pox, and one of varioloid; they were so well quarantined that the disease did not spread. Many persons were vaccinated, those who were not able to pay, as well as those who were; the former by the County Health Officer in compliance with the action of the County Board of Health. Yet there are many who prefer to take their chances rather than be vaccinated.

The sanitary condition of the city is comparatively good. The same may be said of other towns in the county.

The water supply of this city is from two large reservoirs, which receive their supply from the Neosho river; but for culinary purposes the water from cisterns is generally used. There are a number of wells the water of which is of doubtful purity, owing to a number of sink-wells that were sunk to drain cellars and to carry off the filth from hotels and other public buildings. As this was spoken of in my last annual report, I will only add that the city authorities are responsible for allowing these sink-wells. It seems a reprehensible thing to do. But as a general thing, the people both in towns and the country try to have as pure water as the country will afford. The same may be said of ice, milk, and butter.

The ventilation of our public-school buildings is good. They are a credit to the city and county. Our jail is an exception. It is as well kept as it can be under the circumstances. The fault is not in the keeping, but in its architecture. It was condemned in my last annual report, and has been by every health officer and every physician who has attended its inmates. The only improvement that can be made is to build a new one.

Our County Commissioners give a willing and helping hand to any measure that has for its object sanitary improvement. I might here say, that there seems to be quite an improvement among the masses, especially in preventing contagious diseases. Our City Board of Health are alive to the duties devolving upon them.

I might say, in conclusion, that a large majority of cases of disease in this county are traceable to zymotic influences. I remain, as ever, yours truly,

R. W. McCANDLESS, M.D., *County Health Officer.*

PEABODY, MARION CO., January 15, 1889.

J. W. Redden, M.D., Secretary State Board of Health, Topeka, Kas.—DEAR DOCTOR: I to-day send you my annual report of births, deaths, and marriages; also such other facts and reports as are requested. The registration I inclose you was furnished me by the County Clerk.

Out of 7,348 scholars on the rolls in this county, a large proportion have been vaccinated, and many the second time. This is especially true of the cities. Such I know to be the fact in the city of Peabody, and also Marion and Hillsboro. In the rural districts, I presume the proportion is not so large. I would therefore estimate that at least two-thirds of all the school children in the county have been vaccinated. It is very difficult to get the county health office into systematic working order, from the fact that only a few of our physicians are making their returns to this office, as will be seen by the report. This fact has been reported to the County Commissioners, but with them, too, it seems to be a dead letter. If the law compelled physicians and midwives to make their reports regularly and promptly, it would save the county health officer much labor and embarrassment, and at the same time he could make out his regular monthly, quarterly and annual reports with satisfaction. As it is, the reports must of necessity be very imperfect. Then again, the marriage returns are so imperfect that some months no certificates have been returned at all, yet I have endeavored to keep the Probate Judge supplied with blanks so he could issue it with the license. I have had personal talks with said officer, but his promises are the only outcome of my effort. The same with birth and death reports. Unless the law provides a penalty, it will remain a dead letter on the statute books.

During the past year no epidemics nor endemics have been reported; one or two scares, but upon proper investigation they were found to be without foundation—yet good resulted therefrom. Nearly a year ago small-pox was reported in Peabody, and the result was almost universal vaccination, and in many cases revaccination. Investigation, however, proved it to be varicella.

Heretofore the ice supply has been reasonably pure, but since the sewer of the public schools has been turned into Doyle creek, from whence most of our ice was taken, I fear its evil effect will be manifest in the near future. We have no other place to obtain a supply for our town, unless it is shipped in from other points. Then again, when the dry season comes, this stream will in itself be a source of more disease, because it is too sluggish to carry away the filth, unless by a flood, and then it would be very likely to be thrown upon the banks and there exposed to the hot sun and do much injury. This matter was well discussed, and many thought it better for the health of the community to have a large cess-pool built instead of running a sewer; but this was overruled, because some of the *scientific sanitarians* declared upon their oaths that it would improve the public stream rather than pollute it. (A new scientific doctrine! Query: How much excrementitious matter would it require to improve pure water in EACH WELL?) The drainage might be improved in our cities unto much good advantage, and no doubt will have to be done ere long for the safety of public health.

I believe our meat to be healthful. Milk and vegetable supply is good and fair.

There are many feeding-corral within the city limits of Peabody, and some in other towns in the county. This matter will have to be looked into ere long, because the vegetable deposits that remain during the entire year are not conducive to good health. I am informed by one of the local health officers that frequent complaints are made to him in reference to them.

The time is not very far off when a system of drainage or sewerage will have to be adopted or else the water supply will be contaminated with the water closets, be-

cause our vein of water is quite superficial and at an equal depth throughout large areas. I speak of this because during the past year several instances occurred of enteric fever, or typhoid fever, which upon investigation pointed to the facts that sewer gas and matter escaping the sewer pipes percolated into wells and thus gave rise to the poison. In one instance four in one family were taken down, and it was found that the sewer pipe was leaking not very far from the well which supplied the drinking-water. In other respects the sanitary conditions were perfect. A very large water tank was located near the house and a water closet in the house, and the pipe leading from it passed near the well into a cess-pool quite a long distance from the well. Just as soon as it was repaired no new cases were discovered. Few other cases or instances were reported to me. I am in hopes that this matter may be looked into by the local health officers, whose attention I have called to it, especially at Peabody.

I regret that I was so situated that I could not attend the meeting at Emporia in December, but I hope the meeting has taken some action which will tend to better the laws, and will compel an adequate penalty to make the health office efficient. I think there is much room for better coöperation of the profession. I will very gladly aid in any legislative measure to this end.

Respectfully yours,

C. A. LOOSE, M. D., *County Health Officer.*

McPHERSON, McPHERSON Co., January 15, 1889.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: Herewith I submit to you my annual report. The following deaths have been reported to me: One from scarlet fever, eleven from diphtheria, four from typhoid fever, and ten from pulmonary consumption. There has been no disease especially prevalent during the past year. During January and February there were about 160 cases of small-pox, about 7 per cent. of which were fatal.

The total number of pupils enrolled in the public schools of this county, on May 31, 1888, was 5,852.

I am unable to give a report of vaccination, as the physicians have failed to send in their reports on this subject.

The sanitary condition of this county is good.

W. A. SHELTON, M. D., *County Health Officer.*

FONTANA, MIAMI Co., January 15, 1888.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: There have come to my knowledge fifteen cases of scarlet fever in the county; four deaths from diphtheria, which was thought to be communicated from Fort Scott; eleven deaths from pulmonary consumption, and four from cholera infantum. Typho-malarial fever has prevailed extensively in this county.

The number of school children in the county is: males 3,233, females 3,194, total 6,427.

Vaccination has not been properly enforced.

There have been no prevailing epidemics in this county for the past year, and the sanitary condition has been excellent.

GEO. W. ROBINSON, M. D., *County Health Officer.*

ELK CITY, MONTGOMERY Co., January 13, 1889.

J. W. Redden, M. D., Secretary State Board of Health—DEAR DOCTOR: I send you by mail to-day my annual report. Ten cases of scarlet fever have been reported to this office, but no deaths from it. Six cases of diphtheria have been reported, and two deaths from it; seven deaths have been reported from typhoid fever, six from consumption, and fifteen from diarrheal diseases in children.

We have no epidemics prevailing in the county, and no endemics of a prevalent type.

The general sanitary condition of the county and public buildings is good.

Yours truly,

JOHN F. DAVIS, M.D., *County Health Officer.*

NORTON, NORTON CO., January 1, 1889.

J. W. Redden, M.D., Secretary State Board of Health—DEAR SIR: It affords me great pleasure in making out my report for 1888, to state that the people of Norton county are wonderfully blessed with health and a small death-rate. During the last spring there were a few cases of scarlatina, and during the summer there were a few cases of German measles. Since then no sickness worthy of mention.

E. M. TURNER, M.D., *County Health Officer.*

OSBORNE, OSBORNE CO., January 11, 1889.

J. W. Redden, M.D., Topeka, Kansas—DEAR DOCTOR: To-day I mail you my annual report, which I hope will be satisfactory. In some particulars it is not quite as full as I would have liked to make it, but it is the best I could do with the material at hand.

Three cases of diphtheria have been reported to me, and three deaths from it; five cases of typhoid fever, all of which were fatal; seven deaths have been reported from pulmonary consumption, and six from diarrheal diseases in children.

The number of school children in the county is 5,532. I do not know how many have been vaccinated during the year, nor how many have been previously vaccinated.

The health of the county has been better the past year than for several preceding years.

The people generally have shown a disposition to observe the regulations of the State Board of Health. The County Commissioners have shown considerable interest in sanitary work, and I think are in full sympathy with the rules and regulations of the State Board.

There has been a great improvement in the reports sent me during this year over last, but there is still room for improvement, and I shall endeavor to do still better by another year.

Very respectfully,

B. F. CHILCOTT, M.D., *County Health Officer.*

LARNED, PAWNEE CO., January 4, 1889.

J. W. Redden, M.D., Secretary State Board of Health, Topeka—DEAR DOCTOR: My report is very meager, and from a statistical point of view of no value. I cannot get reports from the physicians. I have reported all births and deaths reported. Latterly, through the undertakers, I have succeeded in getting a report of all the deaths in the county. I have not had a report of half the births, and have not taken much pains with the report in consequence. Of course the only value that report could have would be statistical, and a partial report would be misleading.

Ten cases of diphtheria have been reported to me, and two deaths from it; also two deaths from pulmonary consumption, and eight from diarrheal diseases in children. Two deaths from typhoid fever have been reported by an undertaker.

The water supplied by the water-works company of Larned is taken from the Pawnee river, and in my judgment is not healthful. But very few families have used it for domestic purposes. Should it come into general use, especially during the summer months, there would be danger. I do not think the ice has been taken from healthful water.

Our county has been unusually healthy during the entire year, and no epidemics have prevailed.

I intend making more of effort this year, and hope to succeed better.

Yours truly, J. MATHIAS CUMMINS, M. D., *County Health Officer.*

MARVIN, PHILLIPS CO., January 10, 1889.

Dr. J. W. Redden, Secretary State Board of Health, Topeka, Kansas—DEAR DOCTOR: I this day mail to your address properly and, as far as possible, completely filled, all blanks pertaining to my annual report.

The health of the county for the present year was as of the average year. During the early part of the year an epidemic of measles visited the county, and ten fatal cases were reported—principally through complications. There were seven deaths reported from scarlet fever, scattered throughout the eastern and central portions of the county; but the majority of these were perhaps diphtheria. The presence of the rash—which was very evanescent—was perhaps owing to the epidemic influence of measles, which prevailed simultaneously, and “throat trouble” was given as the complication. Five deaths from diphtheria were also reported from the same localities where scarlet fever was thought to prevail. Seven deaths from typhoid fever were also reported from the eastern and central portions of the county, but the undersigned inclines to the opinion that the “typhoid condition” was sometimes mistaken for true typhoid fever. In this opinion he is not alone.

We have about five thousand school children in the county, but as to the number vaccinated, I have no data from which to draw a positive conclusion.

The people generally have a disposition to observe the rules and regulations of the State Board. The County Commissioners have always manifested a disposition to be fair in all matters relative to the regulations of the State Board.

In order to make the annual report of county health officers more complete, and therefore of more value, I would suggest that notice be given to each physician that he will be *requested* to report the number of cases of each contagious disease which may come under his observation during the year, together with the number of fatal cases, probable source of contagion, suggestions as to prevention, etc.; and that county health officers be supplied with blanks prepared for that purpose, and that they provide each physician in their respective counties with a blank and stamped envelope addressed to the health officer. A majority of the physicians would respond to such a request, thus forming the habit of more accurate observation, while families would soon learn to prepare themselves to answer the questions which they know would be asked by the physician, thus aiding in the diagnosis, and at the same time training themselves to be more careful and thoughtful in regard to sources of contagion with which they would become acquainted. True, there are men practicing medicine who do not believe in the contagiousness of typhoid fever, diphtheria, and kindred diseases, and who do not believe in vaccination, and there will always be people who will insist upon employing such barbarians in their families; but the adoption of such a method as suggested above would have a tendency to purge people's minds of such fallacies and interest them in sanitary regulations, thus beginning at the bottom and working upon registered doubters.

Respectfully, ISAIAH MILEY, M. D., *County Health Officer.*

WESTMORELAND, POTTAWATOMIE CO., January 15, 1889.

J. W. Redden, M. D., Secretary State Board of Health, Topeka, Kas.—DEAR DOCTOR: I send you by mail to-day my annual report for the year 1888.

Fifteen cases of scarlet fever have been reported to me, with no fatal cases; eleven cases of diphtheria, and three deaths from it; twenty cases of typho-malarial fever,

and six deaths; nineteen cases of pulmonary consumption, and eleven deaths; one hundred and thirty-nine cases of diarrheal diseases in children, and six deaths.

Malarial fever in the middle and northern parts of our county has been quite prevalent, and I think the six deaths reported to me from that disease are about one-quarter of the proper number. I find this fever usually attacks all the members of the same family. Closer attention to the condition and purity of the water used in the family would lessen the prevalence of this disease.

The number of school children in the county is: Males, 3,385; females, 3,218; total, 6,603. The general sanitary condition of the county and public buildings is good.

Yours truly,

C. A. SKENE, M. D., *County Health Officer.*

PRATT, PRATT CO., January 14, 1889.

J. W. Redden, M. D., Secretary State Board of Health—DEAR DOCTOR: My appointment as County Health Officer dates from March last, and I herewith submit my report.

The majority of our practicing physicians have promptly registered and regularly reported births and deaths; however, some few have neglected their duty in that respect, regardless of being urged to comply with the State laws of health and hygiene.

Total number of births reported, 120; fully one-third more not reported; marriage certificates returned, 55; deaths, 26; fully 25 deaths not reported.

One of our physicians reported to his neighbors that a case under his care had died of diphtheria, but upon investigation I was not convinced of the fact; especially so as the case was not given under the control of the Health Officer, and was not stringently isolated, as diphtheretic cases would demand. There were no other cases diagnosed.

During a limited epidemic of measles in the southern part of our county, one Marion Hite was taken sick Monday, May 14th. A physician was consulted by a member of the family, and medicine sent out. The following Wednesday the physician visited the case, and from the then obscure symptoms pronounced the case as resembling measles. The two succeeding days gave little satisfactory symptoms for a definite diagnosis. However, the following Saturday, May 19th, so alarming and suspicious was the patient's condition, that at the request of the attending physician a consultation was had with Dr. Baehr, of Isabel, and the case at once was pronounced variola. Not satisfied, however, another consultation was had the following day, Sunday, May 20th, with Dr. Hough, of this city, and the former diagnosis confirmed, and was treated as such until the following Wednesday morning, May 23d, at which time the patient died.

As County Health Officer, I was notified of the case, and visited the place the day prior to his death. By order of the County Commissioners I was sent to the infected district, to remain until all danger of further contagion was passed. I promptly placed a quarantine upon a territory embraced in two townships, Elm and Pusey, with a radius of six and eight miles from the infected premises. Also put a special rigid quarantine upon fourteen persons who had visited the case prior to the diagnosis. These fourteen were commanded to remain each upon his own premises for fifteen days from date of quarantine. We supplied them and their families with necessities of food from a sort of commissary department that we organized. The people in general were disposed to aid all in their power to stamp out the infection, and in great part to them is due its success. One or two parties of the specially quarantined were disposed to ignore the commands laid down upon them. In one case we were compelled to make an arrest, and place him under an officer's care.

On Saturday, June 2d, ten days after the death of the case of variola, a four-year-old child of Jacob Kerr's broke out with a suspicious eruption. I visited the case two days after, and promptly pronounced it to be varioloid. On June 15th the case was convalescent. Marion Hite had never been vaccinated. The child was vaccinated by the local physician on Monday, May 21st, which of course mitigated the severity of the disease. However, the child was a very pronounced case of varioloid, the pustules well developed all over her face, neck, arms, body, palms of hands, and soles of her feet. These two cases were two miles separated. The physician attending the case of variola also visited the family and vaccinated the little child at a time he was also in attendance upon the case of variola. Whether the contagium was carried upon the physician's clothing, or through the atmosphere, is a question. However, the case appeared, and one can only surmise as to its cause. The original case was contracted by the party while on a visit in other parts of the State, just prior to his fatal sickness.

During the entire epidemic the health authorities had the hearty coöperation of our most worthy County Commissioners, and to their prompt action is due the successful and speedy termination of this loathsome disease in our county. I also was aided very materially by Dr. Hendrickson, of Sawyer, Kas., and the better class of our practitioners in the county.

With your permission, I take occasion to say, that the authority given health officers by the State law is inefficient. During an epidemic, prompt and courageous action is essential; and were we to follow the letter of the law, we perhaps could find no authority to place violators of health laws under arrest and in confinement. It is a subject that needs an immediate remedy through our State health officers.

The health of our county has been remarkably good. Some few cases of fatal cholera-infantum, typhoid fever, etc., that in spite of best precautions will occur in most localities.

Our City Health Officer, Dr. Thomas McElwain, and City Marshal, Mr. Paul Truitt, have been faithful in the performance of their respective duties respecting public health, and to such action is due our remarkable exemption from specific febrile and zymotic diseases.

The sanitary condition of our county, as well as of the public buildings, is good. Our County Commissioners are in full sympathy with the State health officers, and give all encouragement to the preservation of public health.

Respectfully, J. M. ROGERS, M. D., *County Health Officer.*

LUDELL, RAWLINS Co., January 15, 1889.

J. W. Redden, M. D., Secretary State Board of Health, Topeka, Kansas—DEAR DOCTOR: The following is my annual report for the year 1888: There have been reported to me six cases of typhoid fever, with five deaths; one case of pulmonary consumption, and three cases of diarrheal diseases in children. There have been no epidemics or endemics in the county during the year. The health has been unusually good, and the sanitary conditions of the county and public buildings are excellent.

Yours truly, J. L. CONSTABLE, M. D., *County Health Officer.*

LA CROSSE, RUSH Co., January 15, 1889.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: I send you returns of births, all that I could get returned until to-day (after this was made out got seven more); only had four deaths returned, and three of these in my own practice. I concluded with the President of the Board, to send these returns simply to show the imperfection of the work as now done, and to say to you that if the law is amended this winter we can secure better results for the next report. Many physicians are opposed to filling the blanks gratuitously; and some of them think unless

there is a small fee for each blank filled, it will not be done. Illinois physicians tell me that they report a few cases only, and some of them none. Would it be too expensive to allow ten or fifteen cents for each blank filled for birth or death? Can the fraternity be compelled by law to do a public service for nothing? If the law, as it now is, could be rigidly enforced, it would be of great value to the State; but if a large per cent. of births and deaths is not returned, the value of those returned is not very reliable, or of much value.

I think I reported one family last year in which all the children had scarlet fever, and no other case in the county. I think they must have contracted it from some article purchased for use in the family. It is rather remarkable that the whole family should have it, and no other case result. The sequelæ leave no doubt as to its being scarlet fever.

I knew, thirty-five years ago, of a family contracting variola from a bundle of rags rolled up and placed between the sheeting and shingles of the roof. The rags were pulled out during house-cleaning, became wet, and set free the contagion. This was some three or four years after the family had the small-pox.

Many families use hard water in this part of the State. It is impregnated with iron, magnesia, etc., but I cannot see, during the ten years I have resided in the county, that it has had any material effect upon the health of the people.

There has been no general sickness in this county during the year 1888—nothing of special interest. No marriage certificates returned.

W. M. GOODWIN, M. D., *County Health Officer*.

RUSSELL, RUSSELL Co., January 12, 1889.

J. W. Redden, M. D., *Topeka, Kansas*—DEAR SIR: Inclosed you will find my report for the year 1888. Owing to ill-health I have been unable to report sooner.

In the spring and summer months we had a severe epidemic of intermittent fever, while in the fall months it took on the typhoid character. Some of our physicians were very unfortunate with it, while others did not lose a case. I am unable to give a reason for the difference in the treatment of the two classes.

It has been very dry here for over two years. I presume that has been the cause of so much sickness here within that time. Very respectfully,

J. W. LONG, M. D., *County Health Officer*.

WICHITA, SEDGWICK Co., January 15, 1889.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR SIR: I forward you this day my annual report for the year 1888. There have been reported to me eleven cases of scarlet fever, with one death; there have also been reported five cases of diphtheria and two of typhoid fever, and twelve deaths from diarrheal diseases in children have been reported.

There have been no epidemics or endemics in the county except small-pox during the early part of the year.

The general sanitary condition of the county and public buildings is good.

Yours truly,

E. B. RENTZ, M. D., *County Health Officer*.

TOPEKA, SHAWNEE Co., January 15, 1889.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR SIR: I herewith send you my annual report as County Health Officer of Shawnee county.

The past year has been a fairly healthy one. One hundred and twenty cases of scarlet fever have been reported, the majority occurring during the latter part of the winter, and one death. It prevailed largely during the winter months, threatening an epidemic. Only twenty-one cases of diphtheria have been reported, and two deaths. Typhoid fever prevailed largely during the summer months, due probably

to the open condition of our streets in Topeka, and the use of foul drinking-water. Typhoid and typho-malarial fevers have been unusually prevalent in our county. Twenty-three cases have been reported to me, with five deaths; also twenty deaths from pulmonary consumption, and fifteen deaths from diarrheal diseases in children. The latter disease has not been as prevalent as it was during the year 1887. The principal causes of the last disease are, continued high temperature, impure water, filthy dwellings and surroundings, and improper feeding.

One hundred and eighty deaths have occurred during the year, ninety-four of these being males and eighty-six females. Four hundred and forty-two children have been born in the county, two hundred and twenty-nine males and two hundred and two females; of these three hundred and sixty-seven are white, and seventy-five colored.

By strict enforcement of the law regarding slaughter-houses, keeping the streams as free as possible from all decaying and refuse matter, and the condemnation of all water used for drinking and culinary purposes that upon examination is found to be polluted, would greatly improve the general sanitary condition of the locality. The sanitary conditions of the jail and poor-house have been good, little sickness arising among the inmates.

Respectfully yours, M. A. WILLIAMSON, M.D., *County Health Officer.*

HOXIE, SHERIDAN CO., January 12, 1889.

J. W. Redden, M. D., Secretary State Board of Health, Topeka, Kas.—DEAR DOCTOR: I will have to make a somewhat similar report as last year, from the fact that the physicians here ignore the law, and will not report births, deaths, cases treated, or diseases; and I must make out reports from undertakers' reports, and the report of births are only from my own practice. We have a county attorney of the Quaker persuasion, who did not believe in pushing matters. The County Commissioners have become very agreeable in this matter, the citizens acquiesce with me, but the physicians up to the present have been very uncourteous, and refuse to comply with the law and regulations of the State Board of Health.

There is some secret *fœtus* practice carried on, as there have been several cases of that kind in the county. This outrage is not perpetrated in the lower grade of society alone, but is found most prevalent in the higher grades of society, with the educated, who should know better; but they knowingly and willingly stain their hands with the innocent unborn blood. I do not see why God Almighty, who is the advocate of justice and right, does not wipe from the face of this beautiful earth the perpetrators of this damnable deed when the death-wail of the innocent unborn goes up to him for protection, from the humblest hamlet to the most gorgeously decorated palaces of the land. Let it be midwife or physician, they should be barred from the profession they practice, and incased in the walls of the damned forever.

There have been no epidemics, except as stated in prior reports. Seventy-four cases of typhoid fever have been reported, with five deaths; twelve cases of pulmonary consumption and eight deaths, and seven deaths from diarrheal diseases in children.

Vaccination is not practiced; there are 1,489 children on roll; five hundred of said number have been vaccinated previous to coming to said county. I will make every effort to have physicians comply with the law in the future, as we have a new county attorney. Hoxie, with a population of five hundred, is one of the cleanest and neatest little cities in the West.

I hereby inclose reports of births, deaths, marriages, and general report. The success of the other physicians is so poor that they are ashamed to make a report,

as death follows in their wake. I think there is a "heap" of quackery in their practice.

Yours respectfully,

D. M. FREEMAN, M. D., *County Health Officer.*

GOODLAND, SHERMAN Co., January 15, 1889.

J. W. Redden, M. D., Secretary State Board of Health—DEAR SIR: My annual report for the year 1888 is this day sent to you. Three cases of scarlet fever have been reported, with one death; four cases of diphtheria, and no death from it; sixteen cases of mild typhoid fever, and no death; one case of pulmonary consumption; and two deaths from diarrheal diseases in children.

Our county has been more healthy during the past year than any year since its organization. The sanitary condition of the county and public buildings is good, and the people seem willing to obey all health laws to which their attention is called.

Very respectfully yours,

M. A. RUSH, M. D., *County Health Officer.*

COLBY, THOMAS Co., January 16, 1889.

J. W. Redden, M. D., Secretary Kansas State Board of Health—DEAR SIR: I send herewith the annual report for 1888.

During the year birth, death, burial-case permits and marriage registers have been procured, and written up to date. Physicians observe the registration law, and have cheerfully aided in making reports as complete as possible.

The vaccination rules are not enforced, but probably will be in the near future. About 2,200 children of school age are reported in the county by the County Superintendent of Schools.

There have been reported three cases of deaths from pulmonary consumption—all persons coming from other States for the benefit of the climate. Ten deaths from diarrheal diseases in children have been reported; the extremes of hot days and cool nights of July, August and September are believed to be the prime cause. Measles was epidemic from June to July, introduced by a man in a railroad camp. Probably one hundred and twenty-five cases occurred, but none fatal. Typhomalarial fever prevailed endemically during every month in the year, cases being widely scattered; during June, September, and October, the most fatal cases occurred, probably seventy-five in all.

The ice, meat, milk and vegetable supplies are of excellent quality; and the natural drainage of the county, all that is required in the present stage of our development, is perfect.

Thomas county is conceded to be in an unusually healthy district.

Yours truly,

V. C. EDDY, M. D., *County Health Officer.*

ALMA, WABAUNSEE Co., January 21, 1889.

J. W. Redden, M. D., Secretary State Board of Health, Topeka, Kansas—DEAR SIR: Herewith I send you my annual report for the year 1888.

Two cases of scarlet fever have been reported to this office, both of whom recovered; four cases of diphtheria, and four deaths from it; six cases of typhoid fever and two deaths; also, six deaths from diarrheal diseases in children. The latter disease has not been at all prevalent during the year.

There have been a few cases of small-pox during December and the present month, but no fatal cases reported. The disease did not spread nor become epidemic, and has at this date about subsided. The county and public buildings are in a fairly good sanitary condition. Yours truly,

E. W. ELDRIDGE, M. D., *County Health Officer.*

WASHINGTON, WASHINGTON CO., KAS., January 21, 1889.

J. W. Redden, M. D., Secretary State Board of Health—DEAR DOCTOR: My annual report for the year is forwarded to you this day.

Three cases of diphtheria have been reported to this office, with two deaths; three cases of typhoid fever, and three deaths; two deaths from pulmonary consumption, and two from diarrheal diseases in children.

Malarial fever, with typhoid symptoms, has not been as prevalent as last year, and attended with less fatality. The chief cause producing this disease is the use of water from springs or wells full of organic matter from surface drainage from farms and barnyards.

We have had during the winter a form of influenza or catarrh with cerebral symptoms, frontal headache, redness of throat, white deposit on tongue, redness of fauces and sore throat, often followed by catarrhal pneumonia, impaired digestion, and nervous cough; it has an epidemic tendency, and is peculiar to high altitudes. It repeats itself every few years in this epidemic form, especially in high altitudes, and very rarely in the lower malarial valleys of the streams. The type has been milder this fall than usual. I have seen and treated it three times during a thirty-three years' practice in the State of Kansas. A removal to lower altitudes, near the streams, will often cure chronic cases—malarial poison seeming to be an antidote to it, and *vice versa*.

Typhoid or continued fever may be prevented by better sanitary surroundings, such as pure water in wells, kept free from organic matter and from pollution from the drainage of farm offal, cess-pools and water-closets; also by avoiding taking baths in the streams and mill-ponds in warm weather, isolating the well from the sick, and keeping them in the open air as much as possible.

The general sanitary condition of every locality could be greatly improved by rigid enforcement of health laws, by protecting all streams from offal and dead carcasses, by burning or burying all dead animals, by keeping the streets, alleys, yards and vacant lots clean and disinfected, by placing all cess-pools, privies and out-houses at least one hundred feet from wells.

The law has been promptly complied with this year in this county. The sanitary condition of the county and public buildings is good.

Very truly yours,

CHAS. WILLIAMSON, M.D., *County Health Officer*.

LEOTI, WICHITA CO., January 4, 1889.

Dr. J. W. Redden, Secretary Kansas State Board of Health, Topeka, Kansas—DEAR DOCTOR: The year of 1888 has been an unusually healthy one in this county, as is shown by my death report. There have been but few cases of diseases dangerous to public health.

All public buildings are in good shape, and well ventilated; sanitary condition splendid.

Vaccination is a thing unknown in the county, from its organization to the present time; made an effort at one time to enforce the rule, but nobody seemed inclined to go to the trouble or expense. Our wells are from sixty to eighty feet in depth, and contain an abundant supply of pure water.

Five cases of typhoid fever have been reported, with one death, and three deaths from diarrheal diseases in children.

As no reports had been made to me of marriages, I obtained them from the Probate Judge's record. Inclosed please find report from January to December, 1888.

Respectfully,

C. F. COTTERAL, M.D., *County Health Officer*.

FREDONIA, WILSON Co., January 14, 1889.

J. W. Redden, M. D., Secretary State Board of Health, Topeka, Kansas—DEAR SIR: I have the honor to submit herewith my annual report for Wilson county, to January 1, 1889. All physicians in Wilson county have registered. The number of marriages reported is one hundred and thirty-three. I keep a supply of blank marriage returns in the hands of the Register of Deeds, and he incloses one with each license, which is almost invariably returned with the license: thus the report of marriages is this year very complete.

In regard to the reports of births and deaths, the law has not been so well observed. A few of the physicians ignore the law entirely, claiming that the State has no power to compel them to report without compensation, and at their own expense. To obviate the latter objection, I suggest the plan of having the returns made upon postal cards, to be furnished by the State or county, and addressed to the County Health Officer. As an experiment, the Commissioners of Wilson county have ordered a supply printed, and I hope in consequence to be able to report a year hence a perfect compliance with that portion of the health law relating to statistics by the physicians of this county.

The report for the past year shows: Births, 225; deaths, 93.

The number of school children in the county is: Males, 3,221; females, 3,099; total, 6,320.

In regard to the matter of vaccination, I had postal cards printed and distributed to the teachers throughout the county, requesting them to obtain the desired information. Only three have reported, so that I have no definite means of reporting for the county. From my observations, I am satisfied that the duty of vaccination is entirely neglected. One of the three teachers reports: Number of pupils vaccinated during the past year, 0; number of pupils previously vaccinated, 0; number of pupils never vaccinated, 46.

The sanitary condition of the county, including the cities, is excellent; and the past year has been one of exceptional immunity from epidemics or endemics. The healthfulness in this county during the year has been remarkable.

Seven deaths from typhoid fever have been reported, eight from pulmonary consumption, and seven from diarrheal diseases in children.

In regard to the resolution passed in September by the State Board of Health, I report, from personal observation, that the water, ice, milk, meat and vegetables supplied to the citizens of Wilson county are remarkably healthful and pure, with the exception of the water in some cases, when owing to the neglect or carelessness of the users it has become contaminated. Some cases have come to my notice where typhoid fever was communicated by impure water.

The natural drainage (and we have no other) in the county is excellent. We have no swamps or marshes, or ponds of any extent in the county.

Respectfully submitted.

F. M. WILEY, M. D., *County Health Officer.*

YATES CENTER, WOODSON Co., January 24, 1889.

J. W. Redden, M. D., Secretary Kansas State Board of Health, Topeka, Kas.—DEAR DOCTOR: I herewith submit report for 1888. I have been unable to report sooner, as stated in my communication to you a few days ago. The register shows a greater number of deaths than in any past report, while the health of the county has been far better than for several years. This is explained by the fact that through burial-case permits, deaths are reported which otherwise would never be received. I would suggest that the form of blank be so changed as to get all the facts needful for registration. Births are well reported.

Two cases of diphtheria have been reported to me; fourteen of typhoid fever, with three deaths; eleven deaths from pulmonary consumption, and nine from diarrheal diseases in children. In my judgment, the most frequent causes of the latter disease are intense heat and moisture, together with teething.

The health of the county for the past five months has been excellent.

I am very truly, E. K. KELLENBERGER, M. D., *County Health Officer.*

REGISTRATION OF PHYSICIANS AND MIDWIVES.

The following is a tabulated list of the registration of the physicians and midwives of the seventy-six counties which reported up to December 31, 1887, showing the total registration, and the number representing each school of medicine, in each county:

PREVIOUSLY REGISTERED.

<i>Counties.</i>	<i>Number reg- istered.....</i>	<i>Regular.....</i>	<i>Eccle.....</i>	<i>Homeopathic.....</i>	<i>Others.....</i>	<i>Midwives.....</i>
Allen.....	36	23	3	3	1	6
Anderson.....	33	21	9	1	1	1
Atchison.....	47	30	5	7	3	2
Barber.....	13	11	2			
Bourbon.....	55	40	8	4	2	1
Brown.....	21	16	2	3		
Butler.....	61	34	18	6	3	
Chase.....	26	14	6		5	1
Chautauqua.....	19	14	5			
Clay.....	32	12	3	3	14	
Cloud.....	39	25	3	4	3	4
Coffey.....	39	25	12	2		
Cowley.....	73	47	14	5	4	3
Crawford.....	62	40	9	5	4	4
Davis.....	17	7			10	
Decatur.....	23	11	1	1	7	3
Douglas.....	59	33	7	7	5	7
Elk.....	41	24	10		2	5
Ellis.....	10	8		1	1	
Ellsworth.....	25	13	3		9	
Franklin.....	17	15	2			
Garfield.....	5	4		1		
Graham.....	6	5		1		
Greenwood.....	35	25	4	4	1	1
Harper.....	18	13	1	3		1
Harvey.....	44	29	7	6	1	1
Hodgeman.....	20	10	4	1	3	2
Jackson.....	20	16	1	2	1	
Jefferson.....	35	25	5	4	1	2
Jewell.....	36	26	5	2	1	
Johnson.....	46	32	6	4	3	1
Kingman.....	13	9	1	1		2
Labette.....	71	43	10	4	9	5
Lincoln.....	24	8	3	4	1	8
Linn.....	35	24	9		2	
Lyon.....	50	36	6	6	2	
Marion.....	31	15	6	5	2	3
Marshall.....	49	29	7	6	1	6
McPherson.....	33	24	3	4	1	1
Miami.....	44	24	8	4	4	4
Mitchell.....	41	17	8	3	10	3
Montgomery.....	43	27	7	4	5	
Morris.....	24	21		2	1	
Nemaha.....	38	27	7	4		
Ness.....	4	2	1		1	
Norton.....	31	17	2	1	9	2
Osage.....	71	39	12	5	10	5
Osborne.....	25	17	1	1	3	3
Ottawa.....	24	17	3	3		1
Pawnee.....	18	13	2	2	1	
Phillips.....	30	20	5	1	2	2
Pottawatomie.....	50	36	5	4	1	4
Pratt.....	9	5	1		3	
Rawlins.....	11	5	4		2	
Reno.....	42	28	7	3	4	
Republic.....	36	19	11	3	3	
Rice.....	26	17	5	1	3	

REGISTRATION OF PHYSICIANS AND MIDWIVES FOR 1887—CONCLUDED.

County.	Number registered ...	Regular	Eclectic	Homeopathic ..	Others	Midwives
Riley	6	3	1	1	1	.....
Rooks	40	18	6	.....	.....	16
Rush	23	8	1	.....	14	.....
Russell	19	12	3	.....	1	3
Saline	25	16	4	3	1	1
Sedgwick	74	54	9	9	5	1
Shawnee	147	90	21	20	5	11
Sheridan	7	2	1	.....	2	2
Sherman	9	4	3	.....	2	.....
Stafford	18	8	5	1	.....	4
Sumner	15	10	3	1	1	.....
Thomas	10	4	1	2	3	.....
Wabaussee	22	14	4	.....	3	1
Wallace	3	3	.....	.....	.....	.....
Washington	24	14	7	2	1	.....
Wichita	11	8	1	2	.....	.....
Wilson	38	28	9	1	.....	.....
Woodson	23	16	7	.....	.....	.....
Wyandotte	39	25	7	4	1	2
Totals	2,439	1,524	382	197	201	135

REGISTRATION OF PHYSICIANS AND MIDWIVES DURING THE YEAR 1888.

County.	Number registered ...	Regular	Eclectic	Homeopathic ..	Others	Midwives
Chase	3	1	2	.....	.....	.....
Cloud	4	4	.....	.....	.....	.....
Coffey	3	1	2	.....	.....	.....
Comanche	9	5	1	2	.....	1
Crawford	9	7	2	.....	.....	.....
Decatur	3	1	.....	1	.....	1
Elk	2	2	.....	.....	.....	.....
Ellis	3	1	2	.....	.....	.....
Finney	11	8	2	1	.....	.....
Garfield	2	2	.....	.....	.....	.....
Graham	6	1	.....	.....	1	4
Greenwood	9	6	1	.....	.....	2
Harvey	5	3	.....	.....	2	.....
Jewell	5	4	.....	.....	.....	1
Johnson	3	3	.....	.....	.....	.....
Kingman	5	4	.....	1	.....	.....
Labette	11	6	.....	4	.....	.....
Lane	10	4	1	.....	2	3
Linn	7	5	1	.....	.....	1
Marion	10	6	2	1	1	.....
Miami	4	2	1	1	.....	.....
Montgomery	15	3	.....	.....	9	3
Nemaha	7	4	1	2	.....	.....
Norton	3	2	.....	.....	1	.....
Osage	3	2	1	1	4	.....
Osborne	3	6	.....	.....	.....	1
Pawnee	2	.....	2	.....	.....	.....
Phillips	4	1	.....	.....	3	.....
Pottawatomie	5	2	1	1	2	1
Pratt	15	12	1	1	1	.....
Rawlins	8	4	3	1	.....	.....
Russell	22	2	.....	.....	.....	.....
Saline	7	6	.....	.....	1	.....
Sedgwick	21	13	2	4	.....	2
Shawnee	14	8	3	.....	2	1
Sherman	5	1	2	.....	.....	2

REGISTRATION OF PHYSICIANS AND MIDWIVES, FOR 1888 — CONCLUDED.

<i>Counties.</i>	<i>Number registered ...</i>	<i>Regular</i>	<i>Ecclectic.....</i>	<i>Homeopathic...</i>	<i>Others.....</i>	<i>Midwives.....</i>
Thomas.....	12	6	2	1	.....	3
Washington.....	8	4	.....	2	1	1
Wichita.....	3	2	.....	.....	1	.....
Wilson.....	1	.....	1	.....	.....	.....
Woodson.....	6	4	.....	1	1	.....
Totals.....	288	162	40	26	32	28

On the following pages is a complete list of the physicians and accoucheurs, as registered during the past year in various counties of the State. The names of the counties, as well as of the physicians and midwives, are given in regular alphabetical order. The date of registration, school of practice, post-office address, the age, nativity, number of years in practice, number of years in practice in Kansas, the date when the diploma was conferred, name of college, and place of graduation, are given.

We invite your careful attention to said registration.

SUPPLEMENTAL REGISTRATION OF PHYSICIANS AND

Name.	When registered.	School of practice.	Residence and P. O. address.	County.	Age
Allison, Wm. J.....	September 1, 1888...	Eclectic.....	Matfield Green...	Chase.....	39
Otterman, J. M.....	January 1, 1889.....	".....	Cottonw'd Falls...	".....	14
Ranells, C. S.....	September 19, 1888...	Regular.....	Cedar Point.....	".....	33
Letousman, Alfred.....	May 12, 1888.....	Regular.....	Concordia.....	Cloud.....	29
McDonald, F. C.....	February 16, 1888...	".....	".....	".....	27
Rawlings, D. W., jr.....	May 31, 1888.....	".....	".....	".....	23
Young, O. K.....	January 10, 1888...	".....	".....	".....	42
Cushingberry, J. T.....	September 1, 1888...	Regular.....	Waverly.....	Coffey.....	38.
Neigberg, S. J.....	".....	Eclectic.....	Burlington.....	".....	49
Taylor, A. W.....	December 31, 1886...	".....	".....	".....	22
Holliday, John S.....	February 8, 1888...	Homeopathist...	Coldwater.....	Comanche,	44
Harris, W. H.....	February 29, 1888...	Eclectic.....	Avilla.....	".....	29
Pennypacker, O. P.....	February 24, 1886...	Homeopathist...	Nescatunga.....	".....	33
Phillips, M. F.....	May 11, 1888.....	Midwife.....	Avilla.....	".....	56
<i>Not registered:</i>					
Ball, J. P.....	".....	Allopathic.....	Coldwater.....	Comanche, .....	.....
Kinsey, Dr.....	".....	".....	Evansville.....	".....	.....
Pritchard, George.....	".....	".....	Coldwater.....	".....	.....
Sombart, J. E.....	".....	".....	".....	".....	.....
Winn, Dr.....	".....	".....	Protection.....	".....	.....
Day, F. A.....	November 16, 1888...	Regular.....	Pittsburg.....	Crawford... ..	38
Fasquelle, Louis W.....	November 13, 1888...	".....	Girard.....	".....	50
Gardner, Jas. B.....	January 2, 1888.....	".....	".....	".....	33
Knox, G. W.....	January 6, 1888.....	".....	Pittsburg.....	".....	37
King, G.....	June 5, 1888.....	".....	".....	".....	33
Lentz, N.....	September 10, 1888...	Eclectic.....	".....	".....	.....
Markham, W. W.....	December 12, 1888...	".....	Mulberry Grove,	".....	55
Tracy, H. A.....	March 26, 1888.....	Regular.....	Cherokee.....	".....	62
Trim, A.....	July 30, 1888.....	".....	Farlington.....	".....	58
Tilden, S. C.....	August 20, 1888.....	Allopathic.....	Oberlin.....	Decatur.....	22
Wright, Wm. C.....	April 15, 1887.....	Homeopathist...	".....	".....	27
Newbury, Mrs. C. H.....	December 3, 1888...	Midwife.....	".....	".....	33
Bean, Francis.....	November 1, 1888...	Regular.....	Moline.....	Elk.....	43
Michall, W. L.....	June 15, 1888.....	".....	Elk Falls.....	".....	26
Jones, C. R.....	June 1, 1888.....	Eclectic.....	Walker.....	Ellis.....	38
Rafter, Jno. A.....	June 13, 1888.....	Regular.....	Hays City.....	".....	32
Righter, C. C.....	January 21, 1888...	Eclectic.....	".....	".....	62
Neal, G. L.....	January 18, 1889...	Regular.....	".....	Finney.....	53
Sandercreek, J. O.....	January 26, 1888...	".....	Lakin.....	Kearney.....	31
VauBrunt, E. W.....	January 5, 1888...	".....	Pierceville.....	Finney.....	38
Zimmermann, J. A.....	March 26, 1888.....	Eclectic.....	Garden City.....	".....	.....
Coleman, W. L.....	February 7, 1888...	Regular.....	Ravanna.....	Garfield.....	32
Moore, G. P.....	January 16, 1888...	".....	Kalvesta.....	".....	27
Brown, E. M.....	March 25, 1888.....	Regular.....	Fremont.....	Graham.....	24
<i>Not registered:</i>					
Arderly, J. Iron.....	".....	".....	".....	".....	.....
Baker, Sarah M.....	".....	Midwife.....	Olean.....	Graham.....	.....
Jaggers, Mrs.....	".....	".....	Hill City.....	".....	.....
Jobes, Mrs. E.....	".....	".....	".....	".....	.....
Miner, Mrs. M.....	".....	".....	Bogue.....	".....	.....
Allison, W. J.....	October 18, 1888...	Allopath.....	Luseland.....	Greenw'd.....	40
Bush, Bery F.....	May 20, 1887.....	Regular.....	Enreka.....	".....	29
Crider, J. Jackson.....	April 25, 1888.....	".....	Ottumwa, Iowa...	".....	57
Jones, W. B.....	September 5, 1888...	Eclectic.....	Fall River.....	Greenw'd.....	53
Lambert, W. L.....	February 20, 1888...	Regular.....	Madison.....	".....	22
Munk, G. W.....	October 19, 1888...	".....	Quincy.....	".....	46
Myers, J. F.....	October 18, 1887...	".....	Eureka.....	".....	31
Lillie, Mrs. D.....	".....	Midwife.....	".....	".....	.....
Hurd, Mrs. H.....	".....	".....	Neal.....	".....	.....
Baer, D. C.....	June 27, 1888.....	Regular.....	Newton.....	Harvey.....	30
Mutz, Chas. M.....	February 2, 1888...	".....	Halstead.....	".....	34
Smolt, C. F.....	September 12, 1888...	".....	Newton.....	".....	36

ACCOUCHEURS BY COUNTIES, IN THE STATE OF KANSAS.

Nativity.	Years in practice.....	Years practice in Kansas....	When diploma was conferred.	Name of college, and place of graduation.
America	10	1½		Certificate from College Phys. & Surg., Columbus, O.
" "	15	4	May 24, 1877.....	American Medical College, St. Louis.
" "	7	1	February 24, 1881..	Hospital College, Louisville, Ky.
Canada.....	2		May 12, 1886.....	Loyal University, Quebec, Canada.
America	3		1887.....	Bellevue Hospital Medical College, New York City.
" "			Undergraduate.....	Chicago Medical College, Chicago, Ill.
" "	11		March 11, 1876.....	Jefferson Medical College, Philadelphia, Penn.
Kentucky.....	14	½	March 16, 1875.....	College of Physicians and Surgeons, Louisville, Ky.
Ohio.....	17		March, 1884.....	Eclectic, Medical, and Homeopathic.
" "	1		January 1, 1887.....	Eclectic Medical Institute, Cincinnati, O.
America	14	4	February 14, 1874..	Homeopathic Medical College of Missouri, St. Louis.
" "	7	3	January 2, 1881.....	American Medical College, St. Louis, Mo.
" "	10	8	March 18, 1878.....	Philadelphia and St. Louis.
" "	23	3		
.....				
.....				
.....				
.....				
America	10	5		
France.....			April 29, 1855.....	University of Michigan.
Virginia.....	8		March 29, 1881.....	Louisville Medical College, Ky.
America	15	10	June 15, 1886.....	London, England; Edinburgh, Scotland.
" "	10	8		State University, Cincinnati.
German.....	16		March, 1867.....	University of Belgium.
Kentucky.....	20	20	September, 1879....	Certificate Kansas Eclectic Board of Examiners.
New York.....	38			
Iowa.....	14	1	March, 1874.....	Ann Arbor, Mich.
America			June, 1888.....	University of New York, N. Y.
" "		2	March 1, 1887.....	University of Iowa, Iowa City.
.....				
Ohio.....	18		March, 1875.....	Medical College of Cincinnati, O.
.....			March, 1888.....	Kansas City Medical College, Kansas City, Mo.
America	9	6		
" "	11	9	February 17, 1878..	University of New York.
" "	26	4	June 3, 1868.....	State Homeopathic Institute, Minnesota.
America	31	3	March, 1858.....	University of New York, N. Y.
England.....	14	9	May 8, 1873.....	Royal College, Plymouth, England.
Illinois.....	7	5	March, 1881.....	
America	45		1843.....	Missouri Medical College, St. Louis.
America	17	12		
" "	5	3	March 20, 1883.....	Ohio Medical, Cincinnati, O.
America			March 7, 1888.....	Medical Department University of Iowa.
.....				
.....				
.....				
.....				
.....				
Virginia.....	13	2	February 25, 1875..	College of Physicians and Surgeons, Cincinnati, O.
Missouri.....	7	4	February 26, 1884..	University of Missouri.
Virginia.....	23	7	June, 1870.....	University of Pennsylvania A. A., Philadelphia.
Kentucky.....	25	14	February 23, 1883..	Eclectic Medical College, St. Louis.
North Carolina.	7		February 16, 1888..	Louisville Medical College, Ky.
New York.....	25	22	April 18, 1886.....	Toronto Medical College, Toronto, Canada.
Indiana.....	7	4	February 26, 1884..	College of Physicians and Surgeons, Keokuk, Iowa.
.....				
.....				
Illinois.....	1	{	1887.....	University of Vermont, Burlington, Vt.
.....			1888.....	McGill University, Montreal, Canada.
Indiana.....	13	¾	1875.....	Louisville Medical College, Louisville, Ky.
Illinois.....	11	10	1878.....	Rush Medical College, Chicago.

SUPPLEMENTAL REGISTRATION OF PHYSICIANS AND

<i>Name.</i>	<i>When registered.</i>	<i>School of practice.</i>	<i>Residence and P. O. address.</i>	<i>County.</i>	<i>Age</i>
<i>Not registered:</i>					
Burris, Dr.....			Burrtou.....	Harvey.....	
Lawrence, Dr.....			Halstead.....	".....	
Baker, Woodruff.....	April 16, 1888.....	Allopath.....	Lovewell.....	Jewell.....	
Powell, L. A.....	October 3, 1888.....	Regular.....	Superior, Neb.....	Nuckolls, Neb.....	
Sabin, Alman J.....	August 1, 1888.....	".....	Beatrice, Neb.....	".....	
Whitney, Geo. W.....	April 24, 1888.....	Allopath.....	Ionida.....	Jewell.....	32
Rock, H.....	June 30, 1888.....	Midwife.....	Mankato.....	".....	52
Ewing, C. W.....	December 28, 1888.....	Regular.....	Edgerton.....	Johnson.....	27
Sawyer, C. J.....	February 4, 1888.....	".....	Spring Hill.....	".....	33
Schenck, Walter.....	September 3, 1888.....	".....	Stillwater.....	".....	39
Hoag, J. H.....	November 5, 1888.....	Homeopathist.....	Kingman.....	Kingman.....	35
Holder, S. T.....	July 20, 1888.....	Regular.....	New Murdock.....	".....	
Gwinn, —.....	July 20, 1888.....	".....	Spivey.....	".....	
Tipton, Wm.....	April 25, 1888.....	".....	Nashville.....	".....	42
Wheeler, F. B.....	September 6, 1888.....	".....	".....	".....	35
Boardman, E. W.....	October 9, 1888.....	Homeopathist.....	Parsons.....	Labette.....	25
Bowman, W. T.....	February 9, 1888.....	Regular.....	Angola.....	".....	38
Francisco, E.....	September 11, 1888.....	Homeopathist.....	Parsons.....	".....	76
Fuller, Henry E.....	January 5, 1889.....	Regular.....	Oswego.....	".....	42
Hill, J. B.....	August 13, 1888.....	".....	".....	".....	32
Johnson, S. W.....	December 13, 1888.....	".....	Valeda.....	".....	32
Martin, C. W.....	October 1, 1888.....	".....	Altamont.....	".....	27
Walker, J. L.....	April 4, 1888.....	Homeopathist.....	Oswego.....	".....	44
Waggoner, M. C.....	June 6, 1888.....	".....	".....	".....	24
Whittier, C. A.....	November 2, 1888.....	Eclectic.....	".....	".....	73
Warren, A. H.....	December 3, 1888.....	Regular.....	".....	".....	48
Colley, J. A.....	November 9, 1888.....	Regular.....	Farnsworth.....	Lane.....	39
Clark, Eliza.....	November 26, 1888.....	Midwife.....	Alamota.....	".....	62
Lucas, Maggie.....	October 31, 1888.....	".....	Dighton.....	".....	34
Lankford, Mily.....	December 1, 1888.....	".....	Sutton.....	".....	52
Rownd, F. L.....	October 27, 1888.....	Regular.....	Dighton.....	".....	37
Von Platt, A. Trevelyn.....	October 29, 1888.....	".....	".....	".....	27
Woods, Wm. M.....	October 29, 1888.....	".....	".....	".....	38
Webb, E. B.....	November 13, 1888.....	Eclectic.....	Alamota.....	".....	64
<i>Not registered:</i>					
Pierce, —.....		Irregular.....	Shields.....	".....	
Woods, D. L.....		".....	Dighton.....	".....	
Artmann, B. E.....	February 9, 1888.....	Eclectic.....	Mound City.....	Linn.....	23
Buskerville, Amanda.....	August 4, 1888.....	Midwife.....	".....	".....	44
Goe, John W.....	April 3, 1888.....	Regular.....	Centerville.....	".....	
Nemon, L. G.....	March 26, 1888.....	".....	Pleasanton.....	".....	49
O'Brien, M. S.....	August 21, 1888.....	".....	".....	".....	36
Warner, A. H.....	June 1, 1888.....	".....	".....	".....	48
<i>Not registered:</i>					
Winn, W. B.....		".....	LaCygne.....	".....	
Appel, John.....	June 4, 1888.....	Allopathic.....	Lehigh.....	Marion.....	46
Blake, D. C.....	January 29, 1887.....	Eclectic.....	Canada.....	".....	34
Frust, Oliver J.....	May 25, 1888.....	Regular.....	Peabody.....	".....	30
Fulton, C. E.....	August 16, 1888.....	".....	Hillsboro.....	".....	27
Hammond, Hilton.....	December 12, 1887.....	Homeopathist.....	Peabody.....	".....	
Maier, Jos. Ludwig.....	October 27, 1887.....	Eclectic.....	Lehigh.....	".....	55
McFarland, F.....	September 21, 1888.....	Regular.....	Hillsboro.....	".....	
Nettiner, E. M.....	November 4, 1887.....	Herbs.....	Lost Springs.....	".....	68
Schuhardt, Ernst.....	May 31, 1887.....	Allopathic.....	Peabody.....	".....	45
Whittecar, O. B.....	September 24, 1887.....	Regular.....	".....	".....	37
Bliss, E. C.....	April 26, 1888.....	Regular.....	Windom.....	McPherson.....	28
Burt, A. S.....	July 7, 1888.....	".....	McPherson.....	".....	33
Carlson, Mrs. J.....	June 5, 1888.....	Midwife.....	Lindsborg.....	".....	49
Frankenstein, F. von.....	June 18, 1887.....	Eclectic.....	Superior.....	".....	
Hoxsey, G. W.....	March 22, 1888.....	".....	Roxbury.....	".....	26
Maier, J. L.....	March 13, 1888.....	Regular.....	Hillsboro.....	".....	57
Owen, A.....	January 3, 1888.....	".....	Mound Ridge.....	".....	45
Rouze, Joseph E.....	May 9, 1887.....	Eclectic.....	Canton.....	".....	40

ACCOUCHEURS, BY COUNTIES, IN THE STATE OF KANSAS—CONTINUED.

<i>Nativity.</i>	<i>Years in practice.....</i>	<i>Years practice in Kansas...</i>	<i>When diploma was conferred.</i>	<i>Name of college, and place of graduation.</i>
.....
.....
America.....	6	1	1887.....	Chicago Medical College, Chicago, Ill.
".....	6	5	May, 1883.....	University of Pennsylvania.
".....	11	.....	March 23, 1880.....	Bennett Medical College, Chicago.
".....	5	1	1883.....	Starling Medical College, Columbus.
".....	12	12	.....	.....
".....	1	6 mos.	1888.....	Jefferson Medical College, Philadelphia.
".....	9	9	1877.....	College Physicians and Surgeons, Indianapolis, Ind.
".....	18	5 mos.	1888.....	College Physicians and Surgeons, Kansas City, Mo.
America.....	10	1	1883.....	Hahnemann Medical College, Chicago.
".....
".....
".....	13	.....	.....	.....
".....	10	.....	.....	.....
Iowa.....	4	3	February, 1884.....	Hahnemann Medical College, Chicago.
Ohio.....	7	.....	.....	Attended Rush Med. College, Chicago, 1879 and 1880.
.....	39	9	December 10, 1879.....	Homeopathic Examining Board of Kansas.
Massachusetts...	4	.....	March, 1884.....	Bellevue Medical College of Massachusetts.
Ohio.....	7½	7½	1881 and 1887.....	{ College Physicians and Surgeons, Keokuk, Iowa. { Jefferson Medical College, Philadelphia.
West Virginia...	8	1	February, 1880.....	{ Attended Vanderbilt Medical at Nashville, and { University of Tennessee.
Ohio.....	5	5	.....	American Medical, St. Louis.
Illinois.....	7	.....	February 24, 1881.....	Hahnemann Medical College, Chicago, Ill.
Iowa.....	4	.....	March, 1886.....	Hahnemann Medical College, Chicago, Ill.
Massachusetts...	29	5	November, 1860.....	Eclectic P. A. Physio-Medical, Cincinnati.
Pennsylvania...	16	1	March, 186-.....	Medical Department, University of New York.
Missouri.....	11	10	.....	.....
Illinois.....	30	9	.....	.....
Pennsylvania...	4	4	.....	.....
Indiana.....	20	4	.....	.....
".....	14	3	February 17, 1874.....	Rush Medical College, Chicago.
Canada.....	3	1½	March 31, 1885.....	{ McGee & Victoria (Adedown), Montreal. { College of Surgeons, Edinburgh.
Illinois.....	8	4	March 24, 1882.....	Hospital College of Medicine, Louisville, Ky.
New York.....	36	8	.....	Attended King & Sanders Med. Col., Cincinnati, O.
.....
.....
Indiana.....	.....	.....	January 14, 1888.....	Eclectic Medical Institute, Cincinnati, Ohio.
Missouri.....	6	6	.....	.....
Pennsylvania...	18	7	February 2, 1870.....	Rush Medical College, Chicago.
New York.....	27	0	April 18, 1861.....	Castleton Medical College, Vermont.
Missouri.....	13	0	January 31, 1884.....	Certificate State Board of Health, Mo.
America.....	16	1	March 6, 1886.....	.....
.....
Germany.....	.....	.....	.....	Alexander Medical School, Germany.
America.....	.....	.....	1884.....	Bennett Medical College, Chicago.
".....	.....	.....	March, 1883.....	Medical Department, University of Iowa.
".....	.....	.....	March 7, 1888.....	Medical Department, University of Iowa.
".....	.....	.....	February 29, 1887.....	Hahnemann Medical College, Chicago.
Germany.....	.....	.....	1843.....	King University, Munich.
".....	.....	.....	May, 1864.....	Albany, Newport and Bellevue.
".....	6	.....	.....	.....
Germany.....	.....	.....	April 12, 1862.....	Halls Germania, Germany.
America.....	.....	.....	February, 1877.....	Worcester University.
America.....	3	1	February 17, 1888.....	Rush Medical College, Chicago.
".....	10	.....	February 19, 1878.....	Medical Department, University City of New York.
Sweden.....	10	5	.....	.....
Germany.....	.....	11	.....	Kansas Eclectic Medical Association.
America.....	8	.....	.....	American Medical College, St. Louis.
Bavaria.....	37	3	March 31, 1857.....	King University, Bavaria.
Poland.....	14	.....	March 6, 1887.....	Medical College of Alabama.
America.....	16	.....	February 25, 1885.....	Drake University, Des Moines, Iowa.

SUPPLEMENTAL REGISTRATION OF PHYSICIANS AND

Name.	When registered.	School of practice.	Residence and P. O. address.	County.	Age
Schaeffer, H. W.....	April 14, 1888.....	Homeopathic.....	Aiken.....	McPherson.....	56
Thompson, E. K.....	December 31, 1888..	".....	McPherson.....	".....	27
Asbury, H. F.....	June 30, 1888.....	Regular.....	Hillsdale.....	Miami.....	31
Hussey, O. C.....	July 6, 1888.....	".....	Paola.....	".....	27
Numbers, J. R.....	April 17, 1888.....	Eclectic.....	".....	".....	23
Walthen, L. J.....	August 13, 1888.....	Homeopathic.....	".....	".....	39
Baker, A. M.....	April 2, 1888.....	".....	Cherryvale.....	Montgomery.....	
Berryman, G. L.....	January 10, 1888.....	Regular.....	".....	".....	
Burns, B. W.....	May 15, 1888.....	".....	".....	".....	
Graves, W. W.....	June 5, 1888.....	".....	".....	".....	
Hall, H. C.....	February 10, 1888..	Regular.....	".....	".....	
McCaul, C. C.....	July 1, 1888.....	".....	".....	".....	
Not registered:					
Brooks, W. P.....		".....	Caney.....	".....	
Brown, B. D.....		".....	Havana.....	".....	
Laatz, F. A.....		".....	Caney.....	".....	
Reynolds, F.....		".....	".....	".....	
Spence, L. F.....		".....	Coffeyville.....	".....	
Brooks, Mrs. W. P.....		Midwife.....	Caney.....	".....	
McCabe, Mrs. Amanda.....		".....	Coffeyville.....	".....	
Seoville, Mrs. L.....		".....	".....	".....	
Anderson, Alice G.....	April 6, 1887.....	Homeopathic.....	Seneca.....	Nemaha.....	37
Anderson, G. H.....	April 6, 1887.....	".....	".....	".....	27
Free, George B. M.....	December 24, 1888..	Regular.....	Grand Island.....	Hall, Neb.....	27
McKaurey, A.....	June 8, 1887.....	Eclectic.....	Seneca.....	Nemaha.....	45
Reding, Harry.....	March 15, 1888.....	Regular.....	Centralia.....	".....	28
Wileman, Thomas H.....	July 1, 1887.....	".....	Seneca.....	".....	59
Wright, S. A.....	May 16, 1887.....	".....	Bern.....	".....	47
Grey, L. H.....	August 9, 1888.....	Regular.....	Lenora.....	Norton.....	61
Joseph, Jane.....	July 10, 1888.....	".....	Rockell City.....	".....	56
Stalcup, H. G.....		Regular.....	Norton.....	".....	47
Beck, J. E.....	June 23, 1888.....	Homeopathic.....	Peterton.....	Osage.....	25
Forward, Montgomery W.	September 1, 1888..	Regular.....	Quenemo.....	".....	43
Klingberg, Andrew.....	November 10, 1888..	"Pro. Medicine,"	Osage City.....	".....	50
Loggan, K. D.....	September 15, 1888..	Eclectic.....	".....	".....	34
Strom, James Harrison.....	August 26, 1888.....	Regular.....	Melvorn.....	".....	50
Not registered:					
Housley, W. M.....		".....	Burlingame.....	".....	
Prettyman, Dr.....		".....	Melvorn.....	".....	
Swallow, H. H.....		".....	Carbondale.....	".....	
Chilcott, B. F.....	April 16, 1887.....	Regular.....	Osborne.....	Osborne.....	27
Hamilton, W. S.....	February 8, 1887.....	".....	".....	".....	62
Hubbell, H. W.....	December 1, 1887.....	".....	".....	".....	26
Pearce, Mrs. C. J.....	November 22, 1886..	Midwife.....	Alton.....	".....	45
Reynolds, Seth.....	March 1, 1887.....	Eclectic.....	Round Mound.....	".....	37
Snyder, J. C.....	January 21, 1887.....	Regular.....	Osborne.....	".....	33
Young, Helen M.....	February 9, 1887.....	".....	".....	".....	59
Not registered:					
Morill, Lewis.....		".....	Alton.....	".....	
Kozel, M.....	October 10, 1887.....	Eclectic.....	Garfield.....	Pawnee.....	62
Shove, H. P.....	October 11, 1887.....	".....	".....	".....	50
Carman, F. W.....	July, 1888.....	Regular.....	Phillipsburg.....	Phillips.....	29
Not registered:					
Sprague, H. C.....		".....	Prairieview.....	".....	
Von Bucholz.....		".....	Agra.....	".....	40
Walcot, Dr.....		".....	Long Island.....	".....	60
Carter, R. G.....	December 17, 1888..	Regular.....	Myers Valley.....	Pottawat'mie.....	62
Coleman, Mrs. L. A.....	November 16, 1888..	Midwife.....	Garrison.....	".....	
Keys, L. H.....	September 25, 1888..	Regular.....	Westmoreland.....	".....	
Not registered:					
Dockler, Peter.....		".....	Onaga.....	".....	
Folger, W. C.....		".....	Blaine.....	".....	
Everson, W. H.....	September 6, 1888..	Regular.....	Pratt.....	Pratt.....	37
Lewis, Minerva.....	January 18, 1886.....	".....	Lawnsdale P. O.....	".....	30
McCoy, J. N.....	March 6, 1886.....	".....	Iuka.....	".....	28

ACCOUCHEURS, BY COUNTIES, IN THE STATE OF KANSAS—CONTINUED.

<i>Nativity.</i>	<i>Years in practice.....</i>	<i>Years practice in Kansas...</i>	<i>When diploma was conferred.</i>	<i>Name of college, and place of graduation.</i>
Germany.....	32	4	April 3, 1856.....	Universities of Halle and Berlin.
America.....	5	1	February 16, 1883..	Medical College, Chicago, Ill.
West Virginia...	1	.....	February 26, 1886..	Louisville Medical College, Kentucky.
Ohio.....	3	.....	March 7, 1884.....	Ohio Medical College, Cincinnati, O.
".....	3	1	June, 1885.....	Eclectic Medical Institute, Cincinnati, O.
Massachusetts...	7	February 27, 1888..	Chicago Homeopathic College, Chicago.
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America.....	10	2	February 25, 1886..	Hahnemann Medical College, Chicago, Ill.
".....	2	2	February 25, 1886..	Hahnemann Medical College, Chicago, Ill.
".....	5	1	1883.....	Union, of Maryland.
".....	21	1	February 21, 1869..	Bellevue College, New York.
".....	1	1	March 6, 1888.....	Missouri Medical College, St. Louis.
".....	29	.....	.....	Chicago Medical College, Chicago.
".....	5	1	March 15, 1883.....	Northwestern Medical College, St. Joseph.
America.....	23	12	1870.....	Medical Department, University, Wooster, O.
".....	14	9	.....	.....
".....	15	9	1887.....	.....
Pennsylvania...	1	.....	March, 1887.....	Medical Department, University of Iowa.
".....	20	11	.....	Undergraduate.
Sweden.....	20	8	1869.....	Rush Medical College, Chicago, Ill.
Iowa.....	4	4	June, 1886.....	Eclectic Medical College, Cincinnati, O.
Georgia.....	18	5	Spring of 1870.....	Medical College, Augusta, Georgia.
.....
.....
America.....	1	1	April, 1886.....	Jefferson Medical College, Philadelphia.
".....	40	9	.....	Undergraduate.
".....	.....	.....	.....	Undergraduate.
".....	14	14	.....	Undergraduate.
".....	8	4	.....	Ann Arbor, Michigan.
".....	5	1	July, 1881.....	Cleveland Medical College, Cleveland, O.
".....	39	4	March, 1856.....	.....
Bohemia.....	32	13	1853.....	Prague University Medical College.
America.....	20	.....	1864.....	New York Hygienic Therapeutics, N. Y.
Wisconsin.....	1	1	February 22, 1888..	Rush Medical College, Chicago.
.....
America.....	14	11	March, 1882.....	Bellevue College, Boston, Mass.
".....	40	21	.....	.....
America.....	32	12	March, 1870.....	Medical Department Wooster College, Cleveland, O.
.....
.....
America.....	15	.....	March 3, 1881.....	College Physicians and Surgeons, Keokuk, Iowa.
".....	6	$\frac{1}{2}$	March, 1878.....	Medical Department, University of Iowa.
".....	7	.....	February, 1879.....	College Physicians and Surgeons, Keokuk, Iowa.

SUPPLEMENTAL REGISTRATION OF PHYSICIANS AND

<i>Name.</i>	<i>When registered.</i>	<i>School of practice.</i>	<i>Residence and P. O. address.</i>	<i>County.</i>	<i>Age</i>
Perkins, W. F.....	November 23, 1888..	Regular.....	Cullison.....	Pratt.....	45
Rogers, J. M.....	September 7, 1888..	".....	Pratt.....	".....	26
Sampson, G. W.....	April 6, 1886.....	".....	Armstead.....	".....	64
Whittier, C. A.....	November 13, 1886..	Eclectic.....	Saratoga.....	".....	51
Wilson, F. E.....	June 27, 1888.....	Regular.....	Preston.....	".....	34
<i>Not registered:</i>					
Dicks, I. H.....	.....	Homeopathic.....	Pratt.....	".....	52
Hendrickson, C. R.....	.....	Regular.....	Sawyer.....	".....	.....
Peak, O. L.....	.....	".....	Pratt.....	".....	.....
Ralston, A. J.....	.....	".....	".....	".....	.....
Stephens, Dr.....	.....	".....	Cullison.....	".....	.....
Wheeler, Dr.....	.....	Regular.....	Sawyer.....	".....	.....
Young, V. P.....	.....	".....	Cullison.....	".....	.....
Cave, John R.....	January 5, 1886.....	Regular.....	Bird City.....	Cheyenne.....	33
Holmes, S. E.....	July 14, 1888.....	Homeopathic.....	Blakeman.....	Rawlins.....	28
Hunter, S. F.....	January 5, 1888.....	Regular.....	Herndon.....	".....	42
McEvans, W. C.....	December 15, 1887..	Allopathic.....	Atwood.....	".....	36
Pegg, G. R.....	January 1, 1888.....	Eclectic.....	Bird City.....	Cheyenne.....	46
Scott, J. A.....	February 17, 1886..	Regular.....	".....	".....	32
Singleton, E. C.....	January 8, 1886.....	Eclectic.....	Johnston.....	Rawlins.....	50
Warran, Mrs. E. J.....	September 10, 1886..	".....	Allison.....	Decatur.....	46
Foster, E. S. C.....	January 26, 1888.....	Regular.....	Paradise.....	Russell.....	37
Guthrie, E. C.....	May 22, 1888.....	".....	Lucas.....	".....	24
Anderson, A. S. M.....	January 14, 1889.....	Regular.....	Brookville.....	Saline.....	36
Brown, Frank B.....	September 27, 1887..	".....	Salina.....	".....	27
Crawford, J. R.....	January 3, 1887.....	".....	Assaria.....	".....	28
Roberts, R. A.....	January 15, 1889.....	".....	Gypsum City.....	".....	28
Sawhill, J. B.....	September 16, 1886..	Regular.....	".....	".....	29
Thompson, F. O.....	.....	".....	Salina.....	".....	30
Winterbottom, —.....	October 7, 1886.....	".....	".....	".....	48
Amedon, Rebecca.....	December 31, 1888.....	Regular.....	Wichita.....	Sedgwick.....	28
Bass, S. A.....	February 6, 1888.....	Homeopathic.....	".....	".....	36
Brubaker, A.....	June 9, 1888.....	Regular.....	".....	".....	34
Barkalon, J. A.....	August 1, 1888.....	".....	Rose Hill.....	".....	32
Cobb, E. Emma.....	July 7, 1888.....	Eclectic.....	Wichita.....	".....	34
Day, Mary Gage.....	August 29, 1888.....	Regular.....	".....	".....	31
Davis, Giles.....	December 28, 1888.....	".....	".....	".....	33
Dixon, M. F.....	December 26, 1888.....	".....	".....	".....	25
Hood, H. C.....	November 22, 1888.....	".....	".....	".....	33
Hunter, J. M.....	May 3, 1888.....	Eclectic.....	Maize.....	".....	34
Hudson, W. H.....	July 2, 1888.....	Regular.....	Wichita.....	".....	.....
Hoxie, Mrs. A. L.....	July 2, 1888.....	Midwife.....	".....	".....	58
Hupp, Samuel.....	December 26, 1888.....	Regular.....	".....	".....	41
Johnson, John H.....	August 11, 1888.....	".....	".....	".....	26
Null, W. H.....	April 3, 1888.....	".....	".....	".....	40
Pryor, Hannah.....	April 5, 1888.....	Midwife.....	".....	".....	68
Preston, William M.....	October 9, 1888.....	Homeopathic.....	".....	".....	38
Purdue, G. C.....	December 31, 1888.....	Regular.....	".....	".....	34
Series, Warren B.....	March 15, 1888.....	".....	".....	".....	44
Thompson, A. H.....	September 6, 1888.....	Homeopathic.....	".....	".....	29
Wallace, W. A.....	July 28, 1888.....	".....	".....	".....	25
Black, H. H.....	February 27, 1888.....	Regular.....	Topeka.....	Shawnee.....	47
Bowman, J. J.....	April 14, 1888.....	".....	".....	".....	35
Dillings, F. C.....	April 6, 1888.....	Eclectic.....	".....	".....	36
Donaldson, J. W.....	June 19, 1888.....	Regular.....	".....	".....	37
Ellison, Rose.....	August 2, 1888.....	Midwife.....	".....	".....	.....
Grimes, R. H.....	November 3, 1888.....	Allopathic.....	".....	".....	26
Harrison, George E.....	December 13, 1888.....	Eclectic.....	".....	".....	.....
Harrison, J. Charles.....	December 13, 1888.....	".....	".....	".....	.....
McKinley, L. D.....	November 23, 1888.....	Regular.....	".....	".....	55
Mohler, J. H.....	November 21, 1888.....	Allopathic.....	".....	".....	46
Stillyard, E. H.....	April 12, 1888.....	Regular.....	".....	".....	40
Wilson, H. G.....	April 28, 1888.....	".....	".....	".....	55
<i>Not registered:</i>					
Boswell, S.....	.....	.....	North Topeka.....	".....	.....
Sheafer, —.....	.....	.....	Topeka.....	".....	.....
Burwell, E. E.....	February 27, 1888.....	Regular.....	Goodland.....	Sherman.....	27
Barns, L.....	May 1, 1888.....	Eclectic.....	Griswold.....	".....	40

ACCOUCHERS, BY COUNTIES, IN THE STATE OF KANSAS—CONTINUED.

<i>Nativity.</i>	<i>Years in practice.....</i>	<i>Years practice in Kansas.....</i>	<i>When diploma was conferred.</i>	<i>Name of college, and place of graduation.</i>
America	21	3	February 19, 1867...	College of Physicians and Surgeons, Keokuk, Iowa.
"	4	2	February 29, 1884...	University of Louisville, Louisville, Ky.
"	48			College of Physicians and Surgeons, Keokuk, Iowa.
"	28		1870.....	Eclectic School of Ohio.
"	10		February 26, 1877...	Cincinnati College of Med. and Surg., Cincinnati, O.
America	25	9	1869.....	
America				Little Rock, Arkansas.
America				Ohio Medical College, Ohio.
America				Kentucky Medical School, Louisville, Ky.
America				
America				Rush Medical College, Chicago.
America	12	3	1874.....	Cincinnati Medical College, Cincinnati, O.
"	2	$\frac{1}{2}$	1887.....	Hahnemann Medical College, Chicago, Ill.
"	15	4	1872.....	Miami Medical College, Cincinnati, O.
"	8			College of Physicians and Surgeons, Iowa.
"	16	2	1886.....	State Board of Health, Iowa.
"	9		1876.....	Louisville Medical College, Louisville, Ky.
"	9		1876.....	Eclectic Medical Institute, Cincinnati, Ohio.
"	25	14		
America	13	8	December 24, 1884...	Lewis County, New York, Medical Society.
"	1	1	March 2, 1888.....	College of Physicians and Surgeons, St. Louis.
America				University of Pennsylvania.
New Hamp's're.....			June 24, 1887.....	Miami Medical College, and School, New Brunswick.
Pennsylvania.....	4		May 1, 1886.....	University of Pennsylvania, Philadelphia.
Tennessee.....			1886.....	College of Physicians and Surgeons, Baltimore.
"	2		March 15, 1886.....	College of Physicians and Surgeons, Baltimore.
Wisconsin.....			1880.....	Jefferson Medical College, Pennsylvania.
Massachusetts.....	15		February, 1872.....	Colleges at Keokuk and Chicago.
America	5	1	February 28, 1883...	Medical Department U. R. University, Cleveland, O.
"	6		February 24, 1882...	Hahnemann Medical College, Chicago.
"	11	2	March 20, 1887.....	University of Pennsylvania, Philadelphia.
"	7	1		College of Physicians and Surgeons, Keokuk, Iowa.
"	11	3	March 1, 1881.....	
"			June 28, 1888.....	University of Medicine and Surgery, Michigan.
"	4	1	March 10, 1884.....	Ohio Medical College, Cincinnati, O.
"	2	1	February 15, 1887...	Rush Medical College, Chicago, Ill.
"	4	1	June 19, 1883.....	Long Island Medical College, Brooklyn, N. Y.
"	3	1	March 31, 1885.....	Bennett Medical College, Chicago, Ill.
"	1		February 22, 1887...	Meharry Medical College, Nashville, Tenn.
"	25	18		Michigan.
"	3		February 28, 1887...	Ohio Medical College, Cincinnati, O.
"	11	2	February 28, 1884...	Missouri Medical College, St. Louis, Mo.
"	14	3	March 4, 1875.....	Missouri Medical College, St. Louis, Mo.
"	49	2		
"	8	1	March 1, 1881.....	Chicago Homeopathic Medical College, Chicago, Ill.
"	8	2	1880.....	Evansville Medical College, Evansville, Ind.
"	5	0	March 3, 1885.....	University of New York, New York City.
"	1	1	February 16, 1888...	Hahnemann Medical College, Chicago, Ill.
"	4		March 15, 1884.....	Cleveland Homeopathic Hospital Col., Cleveland, O.
America	19	5	February 28, 1878...	Indiana Medical College, Indianapolis, Ind.
"	10	1	March 15, 1878.....	
"	10	3	1878.....	{ Certificate of new laws of Michigan.
"	14		March, 1874.....	{ Licentiate N. Y. State Board Censors, N. Y. Eclectic.
Africa	24	12		University of Louisville, Louisville, Ky.
America	1 $\frac{1}{2}$		March 3, 1887.....	Missouri Medical College, St. Louis, Mo.
Indiana	25		1885.....	College of Physicians and Surgeons, Keokuk, Iowa.
Norway	20		1866.....	University of Medicine, Christiana, Europe.
America	6		June 28, 1882.....	Certificate State Board of Health of Virginia.
Canada	33		December 22, 1857...	Albany Medical College, Albany, N. Y.
America	3		March 4, 1885.....	Medical Department University of Iowa, Iowa City.
Scotland.....	17			

SUPPLEMENTAL REGISTRATION OF PHYSICIANS AND

<i>Name.</i>	<i>When registered.</i>	<i>School of practice.</i>	<i>Residence and P. O. address.</i>	<i>County.</i>	<i>Age</i>
Gandy, H. P.....	May 5, 1888.....	Eclectic.....	Goodland.....	Sherman.....	39
Wicheal, Mrs. M. E.....	February 5, 1888....	Midwife.....	".....	".....	46
Wallace, Rebecca J.....	October 25, 1888.....	".....	Ruleton.....	".....	51
Beaver, Wm. M.....	April 9, 1888.....	Regular.....	Colby.....	Thomas.....	42
Martin, J. W.....	August 26, 1888.....	".....	".....	".....	35
Nahrung, C.....	September 6, 1888....	Homeopathic.....	Oakley.....	".....	58
Patterson, Myra A.....	December 9, 1887....	Eclectic.....	De Munn.....	".....	45
Patterson, H. G.....	September 7, 1888....	".....	".....	".....	46
Reynish, D. J.....	April 26, 1888.....	Regular.....	Brewster.....	".....	32
Stiles, Geo. K.....	January 23, 1888.....	".....	Colby.....	".....	25
Taylor, A.....	December 30, 1887....	".....	Otterbourne.....	".....	64
Craig, Louisa.....	October 8, 1888.....	Midwife.....	Monument.....	".....	56
Miller, Iona.....	October 5, 1888.....	".....	Roxford.....	".....	51
Van Meter, Nannie S....	December 14, 1888....	".....	Colby.....	".....	48
<i>Not registered:</i>					
Weld, J. W.....		Regular.....	Colby.....	".....	
Fredendall, Geo. W.....	June 9, 1886.....	Regular.....	Washington.....	Washington....	23
Hughes, O. W.....	January 12, 1887....	".....	".....	".....	33
Hendersbott, P. M.....	April 10, 1888.....	".....	".....	".....	36
Johnson, Mrs. W. S.....	December 15, 1888....	Midwife.....	Sheridan twp.....	".....	34
Lewis, I. H.....	May 24, 1888.....	Homeopathic.....	Washington.....	".....	60
Men, J. E.....	June 16, 1886.....	".....	De Witt.....	".....	
Mitchell, R. H.....	April 10, 1887.....	Regular.....	Linn.....	".....	27
Runkle, W. S.....	August 30, 1886.....	Allopathic.....	Washington.....	".....	36
Fagaines, H. M.....	October 4, 1887.....	Regular.....	Leoti.....	Wichita.....	32
Knapp, A. R.....	December 27, 1888....	".....	Coronado.....	".....	38
<i>Not registered:</i>					
McKenzie, J. A.....					
McDonald, J. L.....	October 1, 1888.....	Eclectic.....	Benedict.....	Wilson.....	46
Day, S. A.....	March 2, 1887.....	Regular.....	Yates Center.....	Woodson.....	32
Hoke, H. E.....	April 16, 1887.....	Physio-Medical..	Burt.....	".....	48
Hearn, Thomas.....	June 12, 1888.....	Regular.....	Vernon.....	".....	59
Jones, T. A.....	March 1, 1887.....	".....	Toronto.....	".....	43
Morgan, J.....	October 8, 1887.....	".....	Neosho Falls.....	".....	
Spalding, C. S.....	July 10, 1888.....	Homeopathic.....	Toronto.....	".....	
Coffman, G. W.....	June, 1887.....	Homeopathic.....	Garden City.....	Finney.....	28
Cole, Frederick.....	April 5, 1886.....	Regular.....	".....	".....	59
Dulin, Frank.....	January 6, 1886.....	".....	".....	".....	31
Kirby, Geo. L.....	September 13, 1887....	".....	".....	".....	52
Lourance, H. S.....	September 14, 1887....	Eclectic.....	".....	".....	33
Rubottom, W. H.....	November 22, 1887....	Regular.....	".....	".....	52
Sabin, Andrew.....	March 10, 1885.....	".....	".....	".....	

ACCOUCHEURS, BY COUNTIES, IN THE STATE OF KANSAS—CONCLUDED.

Nativity.	Years in practice....	Years practice in Kansas....	When diploma was conferred.	Name of college, and place of graduation.
America.....	18	14	.....	.....
".....	20	.....	.....	.....
".....	17	3	.....	.....
Pennsylvania.....	19	2	.....	.....
Kentucky.....	10	2	March 5, 1879.....	Medical Department, University, Louisville, Ky.
Germany.....	30	20	.....	.....
America.....	13	2	.....	.....
Ohio.....	18	.....	.....	.....
".....	1	.....	February 21, 1888..	Rush Medical, Chicago, Ill.
Indiana.....	4	.....	March 2, 1887.....	Indiana Medical, Indianapolis.
Ohio.....	32	3	.....	.....
".....	16	3	.....	.....
New York.....	7	2½	.....	.....
Kentucky.....	2	.....	.....	.....
America.....	.....	.....	March 23, 1883.....	Medical Department, N. W. University, Keokuk, Ia.
".....	10	9	February 13, 1877..	.....
".....	3	.....	March 27, 1888.....	Chicago Dental Surg., Chicago.
".....	25	10	.....	.....
".....	23	9	March 21, 1857.....	Western Homeopathic, Cleveland, Ohio.
".....	10	1	March, 1888.....	Homeopathic, St. Louis, Mo.
".....	7	.....	January, 1883.....	University of Michigan, Ann Arbor.
".....	13	1	February, 1873.....	Cincinnati Medical College, Cincinnati, Ohio.
America.....	8	1½	March 4, 1880.....	Medical Dept., Wooster University, Cleveland, Ohio.
".....	10	1	March, 1878.....	Starling Medical College, Cincinnati, Ohio.
America.....	14	11	—, 1880.....	Bennett's Medical College, Chicago.
America.....	7	7	March, 1880.....	Kansas City Medical College, Kansas City, Mo.
".....	20	.....	March, 1878.....	Physio-Medical Institute, Cincinnati, Ohio.
".....	30	.....	February 28, 1870..	Indiana Medical College, Indianapolis.
".....	16	12	.....	.....
Ohio.....	3	½	February 25, 1887..	Medical College, Illinois.
Maine.....	25	3	March, 1835.....	Rush Medical College, Chicago, Ill.
Kentucky.....	7	3	February, 1870.....	Bellevue Medical College, New York.
North Carolina,	23	.....	February 28, 1882..	St. Louis Medical Col. of Phys. and Surg., St. Louis.
Iowa.....	12	6	June, 1864.....	Long Island Medical College, Brooklyn, N. Y.
Indiana.....	22	3	June 15, 1875.....	American Medical College, St. Louis, Mo.
Ohio.....	29	.....	November 2, 1877..	.....
			March 10, 1856.....	Jefferson Medical College, Philadelphia.

VITAL STATISTICS.

The following is a list of counties, and number of births in each, that were reported to the Secretary of the State Board of Health by the county health officers and physicians, for the years 1886, 1887, and 1888:

<i>Counties.</i>	<i>1886.</i>	<i>1887.</i>	<i>1888.</i>
Anderson.....			24
Atchison.....			26
Brown.....	248	113	
Butler.....	167	172	
Chase.....	144	107	113
Chautauqua.....	25		
Clay.....	124	73	85
Cloud.....	113	77	54
Coffey.....	192	69	16
Comanche.....			53
Crawford.....		404	598
Davis.....	51	118	128
Decatur.....	96	132	167
Doniphan.....			45
Elk.....	37	142	70
Ellis.....			25
Ellsworth.....		121	113
Finnney.....		145	103
Ford.....		253	149
Franklin.....			83
Garfield.....			29
Graham.....	21		44
Gray.....			12
Greenwood.....	168	124	94
Hamilton.....		15	
Harvey.....	308	126	148
Hodgeman.....		26	35
Jackson.....			28
Jefferson.....	39		56
Jewell.....	160	83	92
Johnson.....	176	228	245
Kingman.....	134	211	265
Labette.....	572	384	170
Lane.....			54
Leavenworth.....			73
Lincoln.....	106	210	156
Linn.....	201	170	244
Lyon.....	185	111	194
Marion.....			183
Marshall.....	336	271	307
McPherson.....			106
Miami.....	114	133	134
Mitchell.....	81	203	
Montgomery.....			238
Morris.....	99	86	
Nemaha.....	220	254	298
Neosho.....			29
Norton.....	147	71	58
Osage.....	441	373	275
Osborne.....			211
Pawnee.....	22		44
Phillips.....	149	93	97
Pottawatomie.....	263	192	194
Pratt.....			120
Rawlins.....	51	35	76
Republic.....	176		3
Riley.....	71		
Rooks.....	231	220	
Rush.....	46		26
Russell.....		118	63
Saline.....	112		169
Sedgwick.....	185		181
Shawnee.....	511	475	442

VITAL STATISTICS, (BIRTHS,)—CONCLUDED.

<i>Counties.</i>	1886.	1887.	1888.
Sheridan.....			18
Sherman.....		16	56
Stafford.....	101		
Stevens.....			11
Thomas.....	36	57	150
Wabauunsee.....	77	91	188
Wallace.....		29	
Washington.....		115	48
Wichita.....		25	67
Wilson.....	235	280	226
Woodson.....	157	193	169
Totals.....	7,128	6,949	7,978

The following is a list of counties, and number of deaths in each, that were reported to the Secretary of the State Board of Health by the county health officers, physicians, and undertakers, for the years 1886, 1887, and 1888:

<i>Counties.</i>	1886.	1887.	1888.
Anderson.....			10
Atchison.....		101	470
Brown.....	47	31	
Butler.....	32	94	
Chase.....	29	31	20
Chautauqua.....	9		
Clay.....	27	78	207
Cloud.....	27	13	10
Coffey.....	76	30	16
Comanche.....			10
Crawford.....		202	321
Davis.....	18	61	109
Decatur.....	24	26	27
Doniphan.....			32
Elk.....	14	49	37
Ellis.....			11
Ellsworth.....		66	89
Finney.....			32
Ford.....		68	84
Franklin.....			33
Garfield.....			4
Graham.....	8		51
Gray.....			4
Greenwood.....	61	91	129
Hamilton.....		8	
Harvey.....	70	50	40
Hodgeman.....		20	17
Jackson.....			5
Jefferson.....	11		24
Jewell.....	44	69	132
Johnson.....	74	136	124
Kingman.....	46	84	62
Kiowa.....			1
Labette.....	179	182	170
Lane.....			6
Leavenworth.....			37
Lincoln.....	22	75	77
Linn.....	63	43	84
Lyon.....	44	50	71
Marion.....			39
Marshall.....	88	188	180
McPherson.....			101
Miami.....	73	85	114
Mitchell.....	28	73	
Montgomery.....			73
Morris.....		29	
Nemaha.....	83	94	60
Neosho.....			16
Norton.....	52	27	24
Osage.....	120	96	72
Osborne.....			79
Pawnee.....	3		23
Phillips.....	43	64	108

VITAL STATISTICS, (DEATHS).—*Concluded.*

<i>Counties.</i>	1886.	1887.	1888.
Pottawatomie.....	98	71	103
Pratt.....			26
Rawlins.....	22	12	27
Republic.....	61		
Riley.....	24		
Rooks.....	50	109	
Rush.....	10		
Russell.....		108	36
Saline.....	33		39
Sedgwick.....			49
Shawnee.....	181	188	180
Sheridan.....			30
Sherman.....		12	24
Stafford.....	21		
Thomas.....	7	25	73
Wabaunsee.....	26	68	111
Washington.....			31
Wichita.....		18	25
Wilson.....	87	112	93
Woodson.....	72	78	102
Totals.....	2,107	3,135	4,394

The following is a list of counties and number of marriages in each that were reported to the Secretary of the State Board of Health by the county health officers, for the years 1886, 1887, and 1888:

<i>Counties.</i>	1886.	1887.	1888.
Brown.....	51	53	
Butler.....		47	
Chase.....		18	13
Chautauqua.....		126	
Clay.....	115	127	119
Cloud.....	22	86	34
Coffey.....	70	78	150
Comanche.....			40
Davis.....	77	100	72
Decatur.....	44	114	82
Elk.....	126	32	95
Ellis.....			67
Ellsworth.....		63	85
Finney.....			61
Ford.....		160	66
Garfield.....			22
Graham.....	37		
Greenwood.....	66	93	46
Hamilton.....		18	
Harvey.....	48	105	152
Hodgeman.....			30
Jefferson.....	7		
Jewell.....	125	146	
Johnson.....	140	230	141
Kingman.....	13	32	98
Labette.....	135	190	180
Lincoln.....	41	37	44
Linn.....	113	105	141
Lyon.....	44	13	
Marion.....			73
Marshall.....	119	171	56
McPherson.....			113
Meade.....		142	
Miami.....	136	150	173
Mitchell.....	57	214	
Montgomery.....			217
Morris.....	9	26	
Nemaha.....	48	48	13
Norton.....	132	118	23
Osage.....	13	11	
Osborne.....			88
Phillips.....	113	113	113
Pottawatomie.....	66	78	121
Pratt.....			55

VITAL STATISTICS, (MARRIAGES,)—*Concluded.*

<i>Counties.</i>	1886.	1887.	1888.
Rawlins.....	3	7	41
Republic.....	70		
Rooks.....	109	93	
Rush.....	5		
Russell.....		92	
Saline.....			150
Sedgwick.....		523	521
Shawnee.....		90	
Sheridan.....	3	21	26
Sherman.....			44
Thomas.....	22	31	49
Wabaunsee.....	3	10	
Wichita.....		23	35
Wilson.....	85	115	133
Woodson.....	26	72	99
Totals.....	2,293	4,111	3,891

Below and on subsequent pages will be found synopses of the annual reports of births, deaths and marriages as returned by the County Health Officers and physicians in the several counties of the State, for the year 1888, and reported to this office; a careful examination of which will be of special interest.

BIRTHS.

In ANDERSON county, the total number of births returned is 24. Of these, 10 were males, and 13 were females; all were white; 7 were the first child of mothers, 5 the second, 6 the third, 1 the fifth, 1 the eighth, and 1 the ninth; 2 fathers were between 21 and 25 years of age, 8 between 26 and 30, 5 between 31 and 35, 2 between 36 and 40, 4 between 41 and 45, 1 between 46 and 50, and 1 was over 55; 3 mothers were between 16 and 20 years of age, 10 between 21 and 25, 5 between 26 and 30, 2 between 31 and 35, and 7 between 36 and 40; 19 fathers and 20 mothers were of American nationality, 4 fathers and 2 mothers of English, and 1 father and 2 mothers of German.

In ARCHISON county, the total number of births returned is 26. Of these, 10 were males, and 16 females; 20 were white, and 6 colored; 8 were the first child of mothers, 8 the second, 2 the third, 3 the fourth, 1 the fifth, 1 the sixth, and 2 the eleventh or more; 3 fathers were between 21 and 25 years of age, 6 were between 26 and 30, 7 between 31 and 35, 4 between 36 and 40, 1 between 41 and 45, and 2 between 46 and 50; 6 mothers were between 16 and 20, 6 between 21 and 25, 5 between 26 and 30, 3 between 31 and 35, 3 between 36 and 40, and 1 between 41 and 45; 13 fathers and 15 mothers were of American nationality, 2 mothers and 1 father of English, 1 mother and 1 father of German, 2 fathers and 1 mother of Irish, and 4 fathers and 4 mothers of African.

In CHASE county, the total number of births returned is 113. Of these, 50 were males, and 62 females, and the sex of 1 not given; 105 were white, and 8 were colored; 30 were the first child of mothers, 21 the second, 21 the third, 11 the fourth, 10 the fifth, 4 the sixth, 3 the seventh, and 2 the tenth; 42 were born in cities and towns of 500 to 5,000 population, 71 in towns of less than 500 population, and in the country; there were 4 twins and three still-births; 12 fathers were between 21 and 25 years of age, 31 between 26 and 30, 21 between 31 and 35, 26 between 36 and 40, 12 between 41 and 45, 4 between 46 and 50, and 1 between 51 and 55; 1 mother was under 15 years of age, 18 between 16 and 20, 36 between 21 and 25, 26 between 26

and 30, 13 between 31 and 35, 11 between 36 and 40, 2 between 41 and 45, and 1 over 45; 99 fathers and 92 mothers were of American nationality, 1 father of English, 2 fathers and one mother of Irish, 1 father and 1 mother of Scotch, 13 fathers and 9 mothers of German, 1 father each of French, Swiss, and Dutch.

In CLAY county, the total number of births returned is 85. Of these, 44 were males, and 41 were females; 80 were white, and 5 colored; 22 were the first child of mothers, 12 the second, 18 the third, 9 the fourth, 6 the fifth, 2 the sixth, 4 the seventh, 4 the eighth, 3 the ninth, 1 the tenth, and 4 the eleventh or more; 33 were born in cities and towns of 5,000 population or over, and 52 in towns of less than 500 population, or in the country; there were three illegitimate children; 1 father was under 20 years of age, 7 between 21 and 25, 26 between 26 and 30, 22 between 31 and 35, 8 between 36 and 40, 9 between 41 and 45, 7 between 46 and 50, 2 between 51 and 55, and 1 over 55; 11 mothers were between 16 and 20 years of age, 28 between 21 and 25, 20 between 26 and 30, 13 between 31 and 35, 9 between 36 and 40, and 4 between 41 and 45; 52 fathers and 53 mothers were of American nationality, 1 mother of British North-American, 6 fathers and 5 mothers of English, 1 father and 1 mother of Irish, 3 fathers and 2 mothers of German, 23 fathers and 23 mothers of Scandinavian.

In CLOUD county, the total number of births returned is 54. Of these, 33 were males, and 21 females; 53 were white, and 1 colored; 5 were the first child of mothers, 8 the second, 11 the third, 8 the fourth, 7 the fifth, 6 the sixth, 3 the seventh, 2 the eighth, 1 the ninth, 1 the tenth, and 4 the eleventh or more; 34 were born in cities and towns of 500 to 5,000 population, 20 in towns of less than 500 population, and in the country; there were 5 still-births; 6 fathers were between 21 and 25 years of age; 21 between 26 and 30, 9 between 31 and 35, 8 between 36 and 40, 4 between 41 and 45, 2 between 46 and 50, and 2 over 55; 8 mothers were between 16 and 20 years of age, 13 between 21 and 25, 11 between 26 and 30, 12 between 31 and 35, 7 between 36 and 40, 2 between 41 and 45, and 1 over 45; 14 fathers and 16 mothers were of American nationality, 32 fathers and 30 mothers of British North-American, 4 fathers and 4 mothers of Scandinavian, and 3 fathers and 2 mothers of Belgian.

In COFFEY county, the total number of births returned is 16. Of these, 5 were males, and 10 were females; all were white; 3 were the first child of mothers, 5 the second, 4 the third, 1 the fourth, 1 the fifth, 1 the eighth, and 1 the ninth; 4 were born in cities and towns of 500 to 5,000 population, and 12 in towns of less than 500 population, and in the country; 2 fathers were between 21 and 25 years of age, 5 between 26 and 30, 7 between 31 and 35, 1 between 36 and 40, and 1 between 46 and 50; 2 mothers were between 16 and 20 years of age, 4 between 21 and 25, 4 between 26 and 30, 5 between 31 and 35, and 1 between 36 and 40; 15 fathers and 15 mothers were of American nationality, 1 father of German, and one mother of Swiss.

In COMANCHE county, the total number of births returned is 53. Of these, 34 were males, and 21 females; all were white; 22 were the first child of mothers, 5 the second, 4 the third, 3 the fourth, and 1 the fifth; there were two pairs of twins; 10 were born in cities and towns of 500 to 5,000 population, and 43 in towns of less than 500 population, and in the country.

In CRAWFORD county, the total number of births returned is 598. Of these, 300 were males, and 298 females; 589 were white, and 9 colored; 124 were the first child of mothers, 100 the second, 83 the third, 82 the fourth, 57 the fifth, 32 the sixth, 29

the seventh, 15 the eighth, 19 the ninth, 10 the tenth, and 10 the eleventh or more; there were 15 still-births; 98 were born in cities of 5,000 or over population, 198 were born in cities and towns of 500 to 5,000 population, and 302 in towns of less than 500 population, and in the country; 3 fathers were under 20 years of age, 73 were between 21 and 25, 164 between 26 and 30, 140 between 31 and 35, 91 between 36 and 40, 39 between 41 and 45, 21 between 46 and 50, 13 between 51 and 55, and 9 over 55; 85 mothers were between 16 and 20 years of age, 150 between 21 and 25, 164 between 26 and 30, 82 between 31 and 35, 55 between 36 and 40, 18 between 41 and 45, and 2 over 45; 449 fathers and 464 mothers were of American nationality, 6 fathers and 2 mothers of British North-American, 27 fathers and 28 mothers of English, 10 fathers and 5 mothers of Irish, 18 fathers and 23 mothers of Scotch, 37 fathers and 30 mothers of German, 9 fathers and 7 mothers of Scandinavian, 1 father and 1 mother of Polish, 1 father and 1 mother of French, 1 father and 1 mother of Swiss, and 1 mother of Dutch.

In DAVIS county, the total number of births returned is 128. Of these, 67 were males, and 61 were females; all were white; 34 were the first child of mothers, 20 the second, 23 the third, 12 the fourth, 17 the fifth, 8 the sixth, 3 the seventh, 4 the eighth, 3 the ninth, 1 the tenth, and 1 the eleventh or more; there was 1 pair of twins; 13 fathers were between 21 and 25 years of age, 44 between 26 and 30, 25 between 31 and 35, 17 between 36 and 40, 17 between 41 and 45, 3 between 46 and 50, 2 between 51 and 55, and 1 over 55; 17 mothers were between 16 and 20 years of age, 27 between 21 and 25, 37 between 26 and 30, 22 between 31 and 35, 16 between 36 and 40, and 2 between 41 and 45; 91 fathers and 87 mothers were of American nationality, 5 fathers and 4 mothers of English, 2 fathers and 2 mothers of Irish, 2 fathers and 1 mother of Scotch, 18 fathers and 14 mothers of German, 9 fathers and 9 mothers of Scandinavian, and 1 father and 1 mother of Swiss.

In DECATUR county, the total number of births returned is 167. Of these, 91 were males, and 76 females; all were white; 62 were the first child of mothers, 40 the second, 19 the third, 18 the fourth, 13 the fifth, 5 the sixth, 4 the seventh, 1 the eighth, 4 the ninth, and 1 the tenth; there were 6 twins, and 5 still-births; 57 were born in cities and towns of 500 to 5,000 population, 95 in towns of less than 500 population, and in the country; 1 father was under 20 years of age, 25 were between 21 and 25, 52 between 26 and 30, 40 between 31 and 35, 28 between 36 and 40, 13 between 41 and 45, 2 between 46 and 50, and 1 between 51 and 55; 35 mothers were between 16 and 20, 41 between 21 and 25, 56 between 26 and 30, 14 between 31 and 35, 13 between 36 and 40, and 2 between 41 and 45; 146 fathers and 145 mothers were of American nationality, 5 fathers and 6 mothers of British North-American, 1 father and 1 mother of English, 8 fathers and 8 mothers of German, and 1 father and 2 mothers of Scandinavian.

In DONIPHAN county, the total number of births returned is 45. Of these, 25 were males, and 19 females; 43 were white, and 1 colored; 16 were the first child of mothers, 10 the second, 4 the third, 3 the fourth, 2 the sixth, 3 the seventh, 3 the eighth, 1 the tenth, and 2 the eleventh or more; there were 3 still-births; 4 fathers were between 21 and 25 years of age, 10 between 26 and 30, 13 between 31 and 35, 4 between 36 and 40, 3 between 41 and 45, and 2 between 46 and 50; 1 mother was under 15 years of age, 4 between 16 and 20, 15 between 21 and 25, 3 between 26 and 30, 8 between 31 and 35, 4 between 36 and 40, and 2 between 41 and 45; 36 fathers and 38 mothers were of American nationality, 1 father of English, 2 fathers and 2 mothers of Irish, 3 fathers and 1 mother of German, and 1 father and 1 mother of Austrian.

In ELK county, the total number of births returned is 70. Of these, 45 were males, and 25 were females; all were white; 10 were the first child of mothers, 18 the second, 8 the third, 10 the fourth, 6 the fifth, 5 the sixth, 4 the seventh, 2 the eighth, 2 the tenth, 1 the eleventh or more; 20 were born in cities and towns of 500 to 5,000 population, 50 in towns of less than 500 population, and in the country; 3 fathers were between 21 and 25 years of age, 14 between 26 and 30, 19 between 31 and 35, 8 between 36 and 40, 8 between 41 and 45, 8 between 46 and 50, and 1 between 51 and 55; 2 mothers were between 16 and 20 years of age, 13 between 21 and 25; 17 between 26 and 30, 8 between 31 and 35, 13 between 36 and 40, 2 between 41 and 45, and 1 over 45; 63 fathers and 64 mothers were of American nationality, 1 father and 1 mother of British North American, 1 father of English, 2 fathers and 1 mother of German, and 1 father of Swiss.

In ELLIS county, the total number of births returned is 25. Of these 17 were males, and 8 were females; all were white; 8 were the first child of mothers, 1 the second, 2 the third, 2 the fourth, 1 the fifth, 1 the sixth, and 1 the eighth; there were three still-births; 2 fathers were between 21 and 25 years of age, 6 between 26 and 30, 4 between 31 and 35, and 4 between 36 and 40; 1 mother was between 16 and 20 years of age, 6 between 21 and 25, 7 between 26 and 30, and 2 between 31 and 35; 14 fathers and 18 mothers were of American nationality, 1 father and 1 mother of Irish, 1 father of Scotch, 5 fathers and 5 mothers of German, and 1 father of Swiss.

In ELLSWORTH county, the total number of births returned is 113. Of these, 55 were males, and 57 females; 111 were white, and 2 colored; 29 were the first child of mothers, 23 the second, 13 the third, 14 the fourth, 6 the fifth, 4 the sixth, 4 the seventh, 4 the eighth, and 3 the ninth; there were 1 pair of twins, 1 illegitimate child, and 5 still-births; 55 were born in cities and towns of 500 to 5,000 population, 58 in towns of less than 500, and in the country; 1 father was under 20 years of age, 12 were between 21 and 25, 22 between 26 and 30, 22 between 31 and 35, 17 between 36 and 40, 7 between 41 and 45, 3 between 46 and 50, 1 between 51 and 55, and 1 over 55; 8 mothers were between 16 and 20 years of age, 31 between 21 and 25, 26 between 26 and 30, 16 between 31 and 35, 4 between 36 and 40, and 5 between 41 and 45; 79 fathers and 79 mothers were of American nationality, 1 mother and 1 father of British North-American, 4 fathers and 2 mothers of English, 2 fathers and 2 mothers of Irish, 1 father and 2 mothers of Scotch, 16 fathers and 17 mothers of German, 1 father and 2 mothers of Scandinavian, and 6 fathers and 5 mothers of Austrian.

In FINNEY county, the total number of births returned is 103. Of these, 49 were males, and 54 females; 99 were white, and 4 colored; 38 were the first child of mothers, 17 the second, 13 the third, 14 the fourth, 9 the fifth, 8 the sixth, and 3 the seventh; there were three twins; they were all born in cities of 500 to 5,000 population; 11 fathers were between 21 and 25 years of age, 27 between 26 and 30, 19 between 31 and 35, 10 between 36 and 40, and 5 between 41 and 45; 7 mothers were between 16 and 20 years of age, 33 between 21 and 25, 16 between 26 and 30, 13 between 31 and 35, and 5 between 36 and 40; 93 fathers and 94 mothers were of American nationality, 1 father of English, 2 fathers and 1 mother of Irish, 3 fathers of Scotch, 2 fathers and 1 mother of German, and 1 father and 2 mothers of Scandinavian.

In FORD county, the total number of births returned is 149. Of these, 83 were males, and 66 females; 147 were white, and 2 colored; 48 were the first child of mothers, 43 the second, 32 the third, 9 the fourth, 4 the fifth, 4 the sixth, 4 the seventh, 4 the eighth, 1 the tenth, and 2 the eleventh or more; there were 12 still-births; 3 fa-

thers were under 20 years of age, 39 between 21 and 25, 51 between 26 and 30, 21 between 31 and 35, 18 between 36 and 40, 5 between 41 and 45, 5 between 46 and 50, 3 between 51 and 55, and 1 over 55; 43 mothers were between 16 and 20 years of age, 54 between 21 and 25, 31 between 26 and 30, 11 between 31 and 35, 8 between 36 and 40, and 3 between 41 and 45; 142 fathers and 145 mothers were of American nationality, 1 father of British North-American, 2 fathers and 1 mother of English, and 4 fathers and 3 mothers of German.

In FRANKLIN county, the total number of births returned is 83. Of these, 50 were males, and 33 females; 82 were white, and 1 colored; 23 were the first child of mothers, 18 the second, 12 the third, 13 the fourth, 4 the fifth, 4 the sixth, 1 the seventh, 3 the eighth, 2 the tenth, and 2 the eleventh; there were 2 still-births, 1 illegitimate child, and 1 pair of twins; 1 father was under 20 years of age, 11 were between 21 and 25, 19 between 26 and 30, 19 between 31 and 35, 12 between 36 and 40, 7 between 41 and 45, and 8 between 46 and 50; 8 mothers were between 16 and 20 years of age, 24 between 21 and 25, 15 between 26 and 30, 14 between 31 and 35, 9 between 36 and 40, 2 between 42 and 45, and 1 over 45; 68 fathers and 71 mothers were of American nationality, 7 fathers and 6 mothers of English, 2 fathers and 1 mother of Irish, 4 fathers and 4 mothers of German, and 2 fathers and 1 mother of Scandinavian.

In GARFIELD county, the total number of births returned is 29. Of these, 14 were males, and 15 females; all were white; 14 were the first child of mothers, 2 the second, 3 the third, 2 the fourth, 5 the sixth, and 1 the eighth; they were all born in towns of less than 500 population, and in the country; there were 2 still-births, and 1 pair of twins; 2 fathers were between 21 and 25 years of age, 11 between 26 and 30, 3 between 31 and 35, 7 between 36 and 40, 2 between 41 and 45, and 2 between 46 and 50; 5 mothers were between 16 and 20 years of age, 8 between 21 and 25, 8 between 26 and 30, 2 between 31 and 35, 4 between 36 and 40, and 1 between 41 and 45; 27 fathers and 27 mothers were of American nationality, and 1 father and 1 mother of Irish.

In GRAHAM county, the total number of births returned is 44. Of these, 25 were males, and 19 females; 42 were white, and 2 were colored; 18 were the first child of mothers, 8 the second, 7 the third, 3 the fourth, 3 the fifth, 2 the sixth, 2 the seventh, and 1 the eighth; all were born in towns of less than 500 population, and in the country; there were 5 still-births; 8 fathers were between 21 and 25 years of age, 11 between 26 and 30, 13 between 31 and 35, 6 between 36 and 40, 2 between 41 and 45, 3 between 46 and 50, and 1 over 55; 9 mothers were between 16 and 20 years of age, 17 between 21 and 25, 12 between 26 and 30, 4 between 31 and 35, 1 between 36 and 40, and 1 between 41 and 45; 37 fathers and 36 mothers were of American nationality, 1 mother of British North-American, 1 father of English, 1 father and 1 mother of Irish, 1 father and 1 mother of Scotch, 2 fathers and 4 mothers of German, 2 fathers and 1 mother of Scandinavian.

In GRAY county, the total number of births returned is 12. Of these, 6 were males, and 6 were females; all were white; 2 were the first child of mothers, 4 the second, 2 the third, 1 the fourth, and 2 the sixth; 6 fathers were between 26 and 30 years of age, 5 between 31 and 35, and 1 between 41 and 45; 3 mothers were between 21 and 25 years of age, and 8 between 26 and 30; all fathers and mothers were of American nationality.

In GREENWOOD county, the total number of births returned is 94. Of these, 47 were males, and 47 females; 93 were white, and 1 colored; 19 were the first child of

mothers, 17 the second, 14 the third, 13 the fourth, 10 the fifth, 4 the sixth, 3 the seventh, 3 the eighth, 4 the ninth, 1 the tenth, and 2 the eleventh or more; there were 3 pairs of twins; 4 fathers were under 20 years of age, 6 were between 21 and 25, 20 between 26 and 30, 20 between 31 and 35, 17 between 36 and 40, 13 between 41 and 45, 4 between 46 and 50, 2 between 51 and 55, and 1 over 55; 10 mothers were between 16 and 20 years of age, 14 between 21 and 25, 22 between 26 and 30, 20 between 31 and 35, 16 between 36 and 40, and 3 between 41 and 45; 81 fathers and 80 mothers were of American nationality, 1 father of African, and 1 father and 1 mother of Irish.

In HARVEY county, the total number of births returned is 148. Of these, 74 were females, and 70 were males; all were white; 33 were the first child of mothers, 25 the second, 20 the third, 19 the fourth, 14 the fifth, 12 the sixth, 7 the seventh, 4 the eighth, 1 the ninth, 3 the tenth, and 3 the eleventh or more; 17 were born in cities of 5,000 or over population, 54 in cities or towns of 500 to 5,000 population, and 76 in towns of less than 500 population, and in the country; there were three pairs of twins; 2 fathers were under 20 years of age, 22 between 21 and 25, 43 between 26 and 30, 25 between 31 and 35, 28 between 36 and 40, 20 between 41 and 45, 5 between 46 and 50, 1 between 51 and 55, and 1 over 55; 19 mothers were between 16 and 20 years of age, 39 between 21 and 25, 36 between 26 and 30, 33 between 31 and 35, 14 between 36 and 40, and 6 between 41 and 45; 120 fathers and 118 mothers were of American nationality, 5 fathers and 4 mothers of British North-American, 3 fathers and 1 mother of English, 1 mother of Irish, 9 fathers and 8 mothers of German, 2 mothers of Scandinavian, 2 mothers of Austrian, 1 father and 1 mother of French, 1 father and 1 mother of Swiss, and 8 fathers and 10 mothers of Dutch.

In HODGEMAN county, the total number of births returned is 35. Of these, 17 were males, and 16 females; all were white; 13 were the first child of mothers, 6 the second, 6 the third, 6 the fourth, 1 the eighth, and 1 the ninth; 21 were born in cities and towns of 500 to 5,000 population, and 14 in towns of less than 500 population, and in the country; 6 fathers were between 21 and 25 years of age, 13 between 26 and 30, 7 between 31 and 35, 5 between 36 and 40, and 2 between 41 and 45; 5 mothers were between 16 and 20 years of age, 12 between 21 and 25, 10 between 26 and 30; 3 between 31 and 35, and 1 between 41 and 45; 34 fathers and 32 mothers were of American nationality, 1 mother of English, 1 father and 2 mothers of German, and 1 mother of Danish.

In JACKSON county, the total number of births returned is 28. Of these, 18 were males, and 10 females; all were white; 8 were the first child of mothers, 6 the second, 2 the third, 5 the fourth, 3 the fifth, 1 the seventh, 2 the ninth, and 1 the twelfth; 4 fathers were between 21 and 25 years of age, 11 between 26 and 30, 3 between 31 and 35, 7 between 36 and 40, 1 between 41 and 45, and 1 between 51 and 55; 4 mothers were between 16 and 20 years of age, 9 between 21 and 25, 7 between 26 and 30, 4 between 31 and 35, 3 between 36 and 40, and 1 between 41 and 45; 25 fathers and 24 mothers were of American nationality, 1 mother of Scotch, and 3 fathers and 3 mothers of Danish.

In JEFFERSON county, the total number of births returned is 56. Of these, 25 were males, and 31 were females; all were white; 12 were the first child of mothers, 11 the second, 11 the third, 5 the fourth, 2 the fifth, 2 the sixth, 2 the seventh, 1 the eighth, 1 the ninth, 1 the tenth, and 3 the eleventh or more; there were 2 still-births, and 1 triplet; 10 fathers were between 21 and 25 years of age, 17 between 26 and 30, 8 be-

tween 31 and 35, 5 between 36 and 40, 7 between 41 and 45, and 5 between 46 and 50; 9 mothers were between 16 and 20 years of age, 11 between 21 and 25, 16 between 26 and 30, 9 between 31 and 35, 6 between 36 and 40, and 1 between 41 and 45; 50 fathers and 49 mothers were of American nationality, 1 father and 1 mother of British North-American, 2 mothers and 2 fathers of German, 1 mother of Irish, and 1 father and 1 mother of Welsh.

IN JEWELL county, the total number of births reported is 92. Of these, 44 were males, and 48 females; all were white; 20 were the first child of mothers, 13 the second, 19 the third, 11 the fourth, 5 the fifth, 2 the sixth, 4 the seventh, 2 the eighth, 4 the ninth, and 3 the tenth; all were born in towns of less than 500 population, and in the country; there were 3 still-births: 14 fathers were between 21 and 25 years of age, 18 between 26 and 30, 18 between 31 and 35, 18 between 36 and 40, 8 between 41 and 45, 5 between 46 and 50, 3 between 51 and 55, and 1 over 55; 9 mothers were between 16 and 20 years of age, 28 between 21 and 25, 15 between 26 and 30, 12 between 31 and 35, 10 between 36 and 40, and 3 between 41 and 45; 76 fathers and 75 mothers were of American nationality, 1 father and 1 mother of British North-American, 3 fathers and 3 mothers of English, 2 fathers and 1 mother of Irish, 1 mother of Scotch, 6 fathers and 4 mothers of German, 1 father and 2 mothers of Swiss, and 1 father and 1 mother of Dutch.

IN JOHNSON county, the total number of births returned is 245. Of these, 115 were males, and 130 females; 237 were white, and 8 colored; 66 were the first child of mothers, 45 the second, 39 the third, 28 the fourth, 16 the fifth, 21 the sixth, 13 the seventh, 3 the eighth, 5 the ninth, 3 the tenth, and 4 the eleventh or more; there were 89 births in cities and towns of 500 to 5,000 population, and 156 in towns of less than 500 population, and in the country; 30 fathers were between 21 and 25 years of age; 72 between 26 and 30, 59 between 31 and 35, 33 between 36 and 40, 19 between 41 and 45, 14 between 46 and 50, 8 between 51 and 55, and 3 over 55; 2 mothers were under 15 years of age, 39 between 16 and 20, 67 between 21 and 25, 64 between 26 and 30, 30 between 31 and 35, 21 between 36 and 40, 12 between 41 and 45, and 1 over 55; 227 fathers and 235 mothers were of American nationality, 1 father of British North-American, 6 fathers and 2 mothers of Irish, 10 fathers and 7 mothers of German, and 1 father and 1 mother of Scandinavian.

IN KINGMAN county, the total number of births returned is 265. Of these, 143 were males, and 122 females; all were white; 74 were the first child of mothers, 67 the second, 40 the third, 36 the fourth, 13 the fifth, 14 the sixth, 5 the seventh, 3 the eighth, 3 the ninth, 3 the tenth, and 1 the eleventh or more; there were 135 births in cities of 5,000 population or over, and 130 in towns of less than 500 population, and in the country; there was 1 pair of twins; 1 father was under 20 years of age, 43 were between 21 and 25, 69 between 26 and 30, 69 between 31 and 35, 42 between 36 and 40, 21 between 41 and 45, 12 between 46 and 50, and 2 between 51 and 55; 2 mothers were under 15 years of age, 44 between 16 and 20, 78 between 21 and 25, 71 between 26 and 30, 36 between 31 and 35, 22 between 36 and 40, and 6 between 41 and 45; 257 fathers and 261 mothers were of American nationality, 1 father and 1 mother of British North-American, 2 fathers of English, 1 father and 2 mothers of Irish, 1 father of Scotch, 2 fathers and 1 mother of German, and 1 father of Scandinavian.

IN LABETTE county, the total number of births returned is 170. Of these, 86 were males, and 79 were females; 154 were white, and 16 colored; 36 were the first child of

mothers, 29 the second, 27 the third, 22 the fourth, 12 the fifth, 15 the sixth, 2 the seventh, 14 the eighth, 2 the ninth, 3 the tenth, and 2 the eleventh or more; there were 16 births in cities of 5,000 population or over, 38 in cities and towns of 500 to 5,000, and 116 in towns of less than 500 population, and in the country; there were 2 still-births, 2 illegitimate children, and 4 twins; 2 fathers were under 20 years of age, 17 between 21 and 25, 56 between 26 and 30, 33 between 31 and 35, 24 between 36 and 40, 16 between 41 and 45, 3 between 46 and 50, 2 between 51 and 55, and 1 over 55; 1 mother was under 15 years of age, 13 were between 16 and 20, 42 between 21 and 25, 36 between 26 and 30, 27 between 31 and 35, 16 between 36 and 40, and 3 between 41 and 45; 158 fathers and 161 mothers were of American nationality, 1 mother of British North-American, 2 fathers of English, 1 mother of Irish, 1 father and 1 mother of Scotch, and 1 father and 1 mother of French.

In *LANE* county, the total number of births returned is 54. Of these, 26 were males, and 28 females; all were white; 20 were the first child of mothers, 9 the second, 11 the third, 4 the fourth, 3 the fifth, 3 the sixth, 3 the seventh, and 1 the ninth; there were 24 births in cities and towns of 500 to 5,000 population, and 30 in towns of less than 500 population, and in the country; there were 6 still-births, and 1 illegitimate child; 3 fathers were between 21 and 25 years of age, 15 between 26 and 30, 9 between 31 and 35, 2 between 36 and 40, 1 between 41 and 45, and 2 between 51 and 55; 8 mothers were between 16 and 20 years of age, 13 between 21 and 25, 9 between 26 and 30; 13 between 31 and 35, and 4 between 36 and 40; 49 fathers and 51 mothers were of American nationality, and 5 fathers and 3 mothers of German.

In *LEAVENWORTH* county, the total number of births returned is 73. Of these, 37 were males, and 35 females; 71 were white, and 2 colored; 29 were the first child of mothers, 17 the second, 6 the third, 6 the fourth, 7 the fifth, 3 the sixth, 2 the seventh, 1 the eighth, and 1 the ninth; there were 2 twins; 1 father was under 20 years of age, 8 between 21 and 25, 17 between 26 and 30, 12 between 31 and 35, 8 between 36 and 40, 2 between 41 and 45, and 1 between 46 and 50; 16 mothers between 16 and 20 years of age, 20 between 21 and 25, 11 between 26 and 30, 8 between 31 and 35, 2 between 36 and 40, and 1 between 41 and 45; 44 fathers and 44 mothers were of American nationality, 1 mother of English, 8 fathers and 9 mothers of Irish, 13 fathers and 14 mothers of German, 1 father and 1 mother of Scandinavian, 1 father of French, and 2 mothers of Swiss.

In *LINCOLN* county, the total number of births returned is 156. Of these, 80 were males, and 76 females; 154 were white, and 2 colored; 42 were the first child of mothers, 32 the second, 26 the third, 14 the fourth, 13 the fifth, 8 the sixth, 9 the seventh, 2 the eighth, 3 the ninth, 2 the tenth, and 2 the eleventh or more; there were 109 births in cities and towns of 500 to 5,000 population, and 47 in towns of less than 500 population, and in the country; 2 fathers were under 20 years of age; 26 between 21 and 25, 42 between 26 and 30, 37 between 31 and 35, 21 between 36 and 40, 14 between 41 and 45, 8 between 46 and 50, 2 between 51 and 55, and 2 over 55; 30 mothers were between 16 and 20 years of age, 51 between 21 and 25 years of age, 25 between 26 and 30, 27 between 31 and 35, 15 between 36 and 40, and 6 between 41 and 45; 126 fathers and 129 mothers were of American nationality, 1 father and 1 mother of British North-American, 2 mothers of English, 2 fathers and 1 mother of Irish, 9 fathers and 7 mothers of German, 6 fathers and 5 mothers of Scandinavian, and 1 father of Swiss.

In *LINN* county, the total number of births returned is 244. Of these, 121 were males, and 122 were females; 241 were white, and 3 colored; 56 were the first child

of mothers, 58 the second, 46 the third, 26 the fourth, 22 the fifth, 10 the sixth, 5 the seventh, 5 the eighth, 2 the ninth, 4 the tenth, and 5 the eleventh or more; there were 55 births in cities and towns of 500 to 5,000 population, and 189 in towns of less than 500 population, and in the country; there were 12 still-births, 5 illegitimate children, and 7 twins; 1 father was under 20 years of age, 47 between 21 and 25, 70 between 26 and 30, 43 between 31 and 35, 31 between 36 and 40, 24 between 41 and 45, 7 between 46 and 50, 4 between 51 and 55, and 3 over 55; 36 mothers were between 16 and 20 years of age, 80 between 21 and 25, 56 between 26 and 30, 27 between 31 and 35, 20 between 36 and 40, 7 between 41 and 45, and 2 over 45; 229 fathers and 230 mothers were of American nationality, 2 fathers and 2 mothers of British North-American, 2 fathers of English, 1 father of Irish, 1 father and 1 mother of Scotch, 2 fathers and 2 mothers of German, and 1 father of Swiss.

In LYON county, the total number of births returned is 194. Of these, 102 were males, and 86 females; 192 were white, and 2 colored; 42 were the first child of mothers, 32 the second, 23 the third, 29 the fourth, 17 the fifth, 9 the sixth, 4 the seventh, 7 the eighth, 2 the ninth, and 1 the tenth; there were 69 births in cities of 5,000 (or over) population, and 118 in towns of less than 500 population, and in the country; there were six still-births, and two twins; 12 fathers were between 21 and 25 years of age, 29 between 26 and 30, 22 between 31 and 35, 20 between 36 and 40, 8 between 41 and 45, 5 between 46 and 50, and 4 between 51 and 55; 1 mother was under 15 years of age, 10 between 16 and 20, 26 between 21 and 25, 33 between 26 and 30, 22 between 31 and 35, 8 between 36 and 40, and 2 between 41 and 45; 146 fathers and 148 mothers were of American nationality, 1 father of British North-American, 1 father and 1 mother of English, 3 fathers and 2 mothers of Irish, 3 fathers and 3 mothers of Scotch, 2 fathers and 3 mothers of German, 1 father and 1 mother of French, 3 fathers of Swiss, and 9 fathers and 6 mothers of Dutch.

In MARION county, the total number of births returned is 183. Of these, 89 were males, and 94 females; all were white; 39 were the first child of mothers, 33 the second, 24 the third, 21 the fourth, 16 the fifth, 12 the sixth, 6 the seventh, 6 the eighth, 10 the ninth, 4 the tenth, and 6 the eleventh or more; there were 156 births in cities and towns of 500 to 5,000 population, and 27 in towns of less than 500 population, and in the country; there were 6 twins and 5 still-births; 2 fathers were under 20 years of age, 19 were between 21 and 25, 49 between 26 and 30, 40 between 31 and 35, 23 between 36 and 40, 24 between 41 and 45, 44 between 46 and 50, 5 between 51 and 55, and 2 over 55; 17 mothers were between 16 and 20 years of age, 56 between 21 and 25, 45 between 26 and 30, 20 between 31 and 35, 24 between 36 and 40, 9 between 41 and 45, and 4 over 45; 107 fathers and 106 mothers were of American nationality, 5 fathers and 4 mothers were of British North-American, 2 fathers and 3 mothers of English, 2 fathers and 2 mothers of Irish, 1 father and 3 mothers of Scotch, 56 fathers and 57 mothers of German, 5 fathers and 4 mothers of Scandinavian, and 1 father and 1 mother of Swiss.

In MARSHALL county, the total number of births returned is 307. Of these, 173 were males, and 132 females; 302 were white, and 5 colored; 74 were the first child of mothers, 53 the second, 42 the third, 41 the fourth, 27 the fifth, 21 the sixth, 17 the seventh, 8 the eighth, 14 the ninth, 1 the tenth, and 6 the eleventh or more; 136 were born in cities and towns of 500 to 5,000 population, and 171 in towns of less than 500 population, and in the country; there were 11 still-births, 2 illegitimate children, and 1 triplet; 41 fathers were between 21 and 25 years of age, 78 between 26 and 30, 58 between 31 and 35, 57 between 36 and 40, 27 between 41 and 45, 21 between 46 and

50, 10 between 51 and 55, and 3 over 55; 47 mothers were between 16 and 20 years of age, 94 between 21 and 25, 67 between 26 and 30, 48 between 31 and 35, 28 between 36 and 40, 12 between 41 and 45, and 1 over 45; 240 fathers and 238 mothers were of American nationality, 2 fathers and 2 mothers of British North-American, 9 fathers and 8 mothers of English, 11 fathers and 9 mothers of Irish, 1 mother of Scotch, 23 fathers and 17 mothers of German, 4 fathers and 7 mothers of Scandinavian, 1 mother of Polish, 6 fathers and 2 mothers of French, and 4 fathers and 1 mother of Swiss.

In McPHERSON county, the total number of births returned is 106. Of these, 49 were males, and 55 females; 26 were the first child of mothers, 23 the second, 16 the third, 16 the fourth, 8 the fifth, 3 the sixth, 3 the seventh, 3 the eighth, 4 the ninth, and 1 the eleventh or more; 11 fathers were between 21 and 25 years of age, 26 between 26 and 30, 22 between 31 and 35, 13 between 36 and 40, 9 between 41 and 45, 3 between 46 and 50, and 1 between 51 and 55; 12 mothers were between 16 and 20 years of age, 28 between 21 and 25, 16 between 26 and 30, 9 between 31 and 35, 14 between 36 and 40, and 4 between 41 and 45; 78 fathers and 71 mothers were of American nationality, 1 father and 1 mother of English, 2 fathers of Russian, 1 father and 1 mother of German, and 14 fathers and 19 mothers of Scandinavian.

In MIAMI county, the total number of births returned is 134. Of these, 67 were males, and 64 females; 130 were white, and 4 colored; 34 were the first child of mothers, 27 the second, 15 the third, 8 the fourth, 9 the fifth, 12 the sixth, 6 the seventh, 6 the eighth, and 1 the ninth; there were 25 births in cities of 5,000 or over population, 21 in cities and towns of 500 to 5,000 population, and 88 in towns of less than 500 population, and in the country; there were 4 still-births, and 1 pair twins; 30 fathers were between 21 and 25 years of age, 26 between 26 and 30, 19 between 31 and 35, 16 between 36 and 40, 7 between 41 and 45, 8 between 46 and 50, 2 between 51 and 55, and 3 over 55; 20 mothers were between 16 and 20 years of age, 27 between 21 and 25, 29 between 26 and 30, 24 between 31 and 35, 11 between 36 and 40, 2 between 41 and 45, and 1 over 45; 104 fathers and 120 mothers were of American nationality, 3 fathers and 1 mother of British North-American, 2 fathers and 1 mother of English, 2 fathers and 3 mothers of Irish, 4 fathers and 3 mothers of German, and 2 mothers of Belgian.

In MONTGOMERY county, the total number of births returned is 238. Of these, 109 were males, and 125 females; 233 were white, and 5 colored; 54 were the first child of mothers, 45 the second, 30 the third, 30 the fourth, 29 the fifth, 13 the sixth, 9 the seventh, 12 the eighth, 4 the ninth, 5 the tenth, and 5 the eleventh or more; there were 152 births in cities and towns of 500 to 5,000 population, and 86 in towns of less than 500 population, and in the country; there were 5 still-births, 1 illegitimate child, and 3 twins; 2 fathers were under 20 years of age, 29 between 21 and 25, 48 between 26 and 30, 48 between 31 and 35, 28 between 36 and 40, 22 between 41 and 45, 21 between 46 and 50, 4 between 51 and 55, and 2 over 55; 1 mother was under 15 years of age, 31 were between 16 and 20, 57 between 21 and 25, 60 between 26 and 30, 27 between 31 and 35, 19 between 36 and 40, and 9 between 41 and 45; 199 fathers and 203 mothers were of American nationality, 1 father of British North-American, 8 fathers and 1 mother of English, 5 fathers and 7 mothers of Irish, 5 fathers and 3 mothers of Scotch, 9 fathers and 12 mothers of German, 2 mothers of French, and 2 fathers and 2 mothers of Dutch.

IN NEMAH county, the total number of births returned is 298. Of these, 167 were males, and 129 females; all were white; 65 were the first child of mothers, 64 the

second, 36 the third, 37 the fourth, 24 the fifth, 20 the sixth, 10 the seventh, 18 the eighth, 9 the ninth, 2 the tenth, and 6 the eleventh or more; 55 were born in cities and towns of 500 to 5,000 population, and 242 in towns of less than 500 population, and in the country; there was 1 pair of twins; 3 fathers were 20 years of age, 35 between 21 and 25, 83 between 26 and 30, 61 between 31 and 35, 43 between 36 and 40, 35 between 41 and 45, 17 between 46 and 50, 8 between 51 and 55, and 4 over 55; 44 mothers were between 16 and 20 years of age, 64 between 21 and 25, 79 between 26 and 30, 49 between 31 and 35, 27 between 36 and 40, 22 between 41 and 45, and 4 over 45; 238 fathers and 248 mothers were of American nationality, 3 fathers and 3 mothers of British North-American, 3 fathers and 5 mothers of English, 5 mothers and 5 fathers of Irish, 3 fathers of Scotch, 34 fathers and 27 mothers of German, 1 father and 1 mother of Scandinavian, 1 father of Austrian, 2 fathers and 2 mothers of French, and 4 fathers and 5 mothers of Swiss.

IN NEOSHO county, the total number of births returned is 29. Of these, 12 were males, and 17 females; 28 were white, and 1 colored; 8 were the first child of mothers, 3 the second, 5 the third, 3 the fourth, 3 the fifth, 4 the sixth, 2 the seventh, and 1 the eighth; there was 1 still-birth; 1 father was under 20 years of age, 3 between 21 and 25, 6 between 26 and 30, 10 between 31 and 35, 2 between 36 and 40, 2 between 41 and 45, and 1 between 46 and 50; 3 mothers were between 16 and 20 years of age, 6 between 21 and 25, 9 between 26 and 30, 4 between 31 and 35, 2 between 36 and 40, and 1 between 41 and 45; 26 fathers and 26 mothers were of American nationality, 1 father of British North-American, and 1 father and 1 mother of Irish.

IN NORTON county, the total number of births returned is 58. Of these, 23 were males, and 32 females; all were white; 17 were the first child of mothers, 7 the second, 6 the third, 9 the fourth, 2 the fifth, 5 the sixth, 1 the eighth, 1 the ninth, and 1 the eleventh or more; there were 11 births in cities and towns of 500 to 5,000 population, and 35 in towns of less than 500 population, and in the country; 11 fathers were between 21 and 25 years of age, 13 between 26 and 30, 18 between 31 and 35, 10 between 36 and 40, 2 between 41 and 45, 2 between 46 and 50, 1 between 51 and 55, and one over 55; 10 mothers were between 16 and 20 years of age, 16 between 21 and 25, 14 between 26 and 30, 8 between 31 and 35, 6 between 36 and 40, and 3 between 41 and 45; 50 fathers and 50 mothers were of American nationality, 3 fathers and 3 mothers of English, and 1 father of French.

IN OSAGE county, the total number of births returned is 275. Of these, 139 were males, and 128 females; 269 were white, and 6 colored; 56 were the first child of mothers, 49 the second, 34 the third, 31 the fourth, 24 the fifth, 28 the sixth, 14 the seventh, 9 the eighth, 2 the ninth, 2 the tenth, and 7 the eleventh or more; 160 were born in cities and towns of 500 to 5,000 population, 115 in towns of less than 500 population and in the country; there were 6 still-births, and 3 twins; 1 father was under 20 years of age, 38 between 21 and 25, 63 between 26 and 30, 65 between 31 and 35, 39 between 36 and 40, 30 between 41 and 45, 17 between 46 and 50, and 1 over 55; 38 mothers were between 16 and 20 years of age, 71 between 21 and 25, 61 between 26 and 30, 46 between 31 and 35, 31 between 36 and 40, 10 between 41 and 45, and 1 over 45; 184 fathers and 198 mothers were of American nationality, 7 fathers and 1 mother of British North-American, 18 fathers and 13 mothers of English, 7 fathers and 7 mothers of Irish, 15 fathers and 18 mothers of Scotch, 5 fathers and 4 mothers of German, 17 fathers and 17 mothers of Scandinavian, 2 fathers of Austrian, 5 fathers and 4 mothers of French, 1 father and 1 mother of Swiss, 1

mother of Dutch, 1 father and 1 mother of Italian, and 1 father and 1 mother of Belgian.

In OSBORNE county, the total number of births returned is 211. Of these, 100 were males, and 111 females; 207 were white, and 3 colored; 47 were the first child of mothers, 42 the second, 37 the third, 27 the fourth, 18 the fifth, 13 the sixth, 11 the seventh, 4 the eighth, 1 the ninth, 1 the tenth, and 2 the eleventh or more; 86 were born in cities and towns of 500 to 5,000 population, and 111 in towns of less than 500 population, and in the country; there were 8 still-births, 3 illegitimate children, and 5 twins; 25 fathers were between 21 and 25 years of age, 62 between 26 and 30, 41 between 31 and 35, 31 between 36 and 40, 21 between 41 and 45, 10 between 46 and 50, 2 between 51 and 55, and 1 over 55; 40 mothers were between 16 and 20 years of age, 49 between 21 and 25, 48 between 26 and 30, 30 between 31 and 35, 16 between 36 and 40, 7 between 41 and 45, and 1 over 45; 182 fathers and 190 mothers were of American nationality, 4 fathers and 3 mothers of British North-American, 3 fathers and 1 mother of English, 1 father and 1 mother of Irish, 1 father and 1 mother of Scotch, 6 fathers and 2 mothers of German, 2 fathers and 1 mother of Swiss.

In PAWNEE county, the total number of births returned is 44. Of these, 29 were males, and 15 females; all were white; 7 were the first child of mothers, 4 the second, 9 the third, 8 the fourth, 5 the fifth, 6 the sixth, 1 the seventh, 1 the eighth, 1 the tenth, and 1 the eleventh or more; there was 1 pair of twins; 4 fathers were between 21 and 25 years of age, 12 between 26 and 30, 9 between 31 and 35, 10 between 36 and 40, 5 between 41 and 45, and 3 between 46 and 50; 4 mothers were between 16 and 20 years of age, 16 between 21 and 25, 11 between 26 and 30, 6 between 31 and 35, 4 between 36 and 40, and 2 between 41 and 45.

In PHILLIPS county, the total number of births returned is 97. Of these, 50 were males and 47 females; all were white; 27 were the first child of mothers, 21 the second, 8 the third, 13 the fourth, 12 the fifth, 5 the sixth, 2 the seventh, 1 the eighth, 4 the ninth, and 2 the tenth; there were 18 births in cities or towns of 500 to 5,000 population, and 79 in towns of less than 500 population, and in the country; there was 1 still-birth; 17 fathers were between 21 and 25 years of age, 28 between 26 and 30, 19 between 31 and 35, 13 between 36 and 40, 15 between 41 and 45, and 2 between 46 and 50; 16 mothers were between 16 and 20 years of age, 24 between 21 and 25, 23 between 26 and 30, 18 between 31 and 35, 10 between 36 and 40, and 1 between 41 and 45; 85 fathers and 90 mothers were of American nationality, 3 fathers and 1 mother of British North American, 3 fathers of Irish, 2 mothers of Scotch, 3 fathers and 2 mothers of German, and 2 fathers and 2 mothers of Dutch.

In POTTAWATOMIE county, the total number of births returned is 194. Of these, 79 were males, and 67 females; 144 were white, and 2 colored; 39 were the first child of mothers, 28 the second; 21 the third, 16 the fourth, 14 the fifth, 10 the sixth, 4 the seventh, 4 the eighth, 2 the ninth, 2 the tenth, and 2 the eleventh or more; there were 36 births in cities and towns of 500 to 5,000 population, and 107 in towns of less than 500 population, and in the country; there were 6 still-births, and 3 twins; 21 fathers were between 21 and 25 years of age, 33 between 26 and 30, 29 between 31 and 35, 15 between 36 and 40, 11 between 41 and 45, 6 between 46 and 50, 2 between 51 and 55, and 1 over 55; 13 mothers were between 16 and 20 years of age, 36 between 21 and 25, 34 between 26 and 30, 17 between 31 and 35, 9 between 36 and 40, 4 between 41 and 45, and 3 over 45; 117 fathers and 120 mothers were of American nationality, 3 fathers and 4 mothers of British North-American, 2 mothers of

English, 17 fathers and 11 mothers of German, 2 fathers and 2 mothers of Scandinavian, 1 mother of Austrian, and 1 father and 1 mother of Austrian.

IN PRATT county, the total number of births returned is 120. Of these, 60 were males, and 60 females; all were white; 30 were the first child of mothers, 28 the second, 16 the third, 17 the fourth, 11 the fifth, 2 the sixth, 5 the seventh, 1 the eighth, 4 the ninth, 3 the tenth, and 1 the eleventh or more; 39 were born in cities and towns of 500 to 5,000 population, and 81 in towns of less than 500 population, and in the country; 107 fathers and 108 mothers were of American nationality, 1 father and 1 mother of British North-American, 3 mothers and 3 fathers of English, 3 fathers and 2 mothers of Irish, 5 mothers and 5 fathers of German, and 1 father of Scandinavian.

IN RAWLINS county, the total number of births returned is 76. Of these 44 were males and 31 females; all were white; 24 were the first child of mothers, 15 the second, 13 the third, 3 the fourth, 6 the fifth, 5 the sixth, 3 the seventh, 2 the eighth, 3 the ninth, and 2 the eleventh or more; all were born in towns of less than 500 population, and in the country: there were 5 still-births, 2 illegitimate children, and 3 twins; 7 fathers were between 21 and 25 years of age, 24 between 26 and 30, 11 between 31 and 35, 13 between 36 and 40, 11 between 41 and 45, and 3 between 46 and 50; 7 mothers were between 16 and 20 years of age, 25 between 21 and 25, 15 between 26 and 30, 11 between 31 and 35, 10 between 36 and 40, 2 between 41 and 45, and 1 over 45; 64 fathers and 66 mothers were of American nationality, 4 fathers and 1 mother of German, 1 father and 3 mothers of Scandinavian, and 2 fathers and 1 mother of Dutch.

IN REPUBLIC county, the total number of births returned is 3. All were females, and white; 1 was the first child of mother, 1 the eighth, and 1 the tenth; 1 father was between 21 and 25 years of age, and 2 between 41 and 45; 1 mother was between 16 and 20 years of age, 1 between 36 and 40, and 1 between 41 and 45; the fathers and mothers were all of American nationality.

IN RUSH county, the total number of births returned is 26. Of these 15 were males and 11 females; all were white; 8 were the first child of mothers, 5 the second, 5 the third, 2 the fourth, 1 the fifth, 2 the sixth, 1 the seventh, and 2 the eighth; all were born in towns of less than 500 population, and in the country; there was 1 still-birth; 4 fathers were between 21 and 25 years of age, 8 between 26 and 30, 5 between 31 and 35, 4 between 36 and 40, 1 between 41 and 45, and 3 between 46 and 50; 3 mothers were between 16 and 20 years of age, 9 between 21 and 25, 6 between 26 and 30, 3 between 31 and 35, and 3 between 36 and 40; 21 fathers and 23 mothers were of American nationality, 1 father and 1 mother of English, 1 father and 1 mother of German, 1 mother of Scandinavian, and 1 father of French.

IN RUSSELL county, the total number of births returned is 63.

IN SALINE county, the total number of births returned is 169. Of these, 81 were males, and 88 females; 159 were white, and 10 colored; 46 were the first child of mothers, 37 the second, 21 the third, 17 the fourth, 8 the fifth, 7 the sixth, 9 the seventh, and 2 the ninth; there were 2 still-births, 2 illegitimate children, and 4 twins; there were 119 births in cities of 5,000 or over population, and 48 in towns of less than 500 population, and in the country.

IN SEDGWICK county, the total number of births returned is 181. Of these, 108 were males, and 73 females; all were white; 62 were the first child of mothers, 42 the second, 23 the third, 9 the fourth, 13 the fifth, 8 the sixth, 5 the seventh, 1 the eighth, and 2 the ninth; 23 fathers were between 21 and 25 years of age, 50 between 26 and 30; 27 between 31 and 35, 23 between 36 and 40, 10 between 41 and 45, and 6 between 46 and 50; 19 mothers were between 16 and 20 years of age, 53 between 21 and 25, 34 between 26 and 30, 25 between 31 and 35, 10 between 36 and 40, and 1 between 41 and 45; 137 fathers and 140 mothers were of American nationality, 3 fathers of British North-American, 3 fathers and 4 mothers of English, 2 fathers and 1 mother of Irish, 2 fathers and 2 mothers of Scotch, 15 fathers and 15 mothers of German, 1 mother of Polish, and 1 father and 2 mothers of Swiss.

IN SHAWNEE county, the total number of births returned is 442. Of these, 229 were males, and 202 females; 367 were white, and 75 colored; 132 were the first child of mothers, 75 the second, 73 the third, 41 the fourth, 38 the fifth, 28 the sixth, 13 the seventh, 10 the eighth, 8 the ninth, 5 the tenth, and 5 the eleventh or more; there were 330 births in cities of 5,000 (or over) population, and 112 in towns of less than 500 population and in the country; 54 fathers were between 21 and 25 years of age, 129 between 26 and 30, 90 between 31 and 35, 60 between 36 and 40, 37 between 41 and 45, 13 between 46 and 50, 10 between 51 and 55, and 2 over 55; 64 mothers were between 16 and 20 years of age, 115 between 21 and 25, 103 between 26 and 30, 59 between 31 and 35, 34 between 36 and 40, 14 between 41 and 45, and 5 over 45; 351 fathers and 352 mothers were of American nationality, 2 fathers and 2 mothers of British North-American, 12 fathers and 10 mothers of English, 7 fathers and 6 mothers of Irish, 4 mothers and 4 fathers of Scotch, 17 fathers and 13 mothers of German, 23 fathers and 23 mothers of Scandinavian, and 2 fathers and 2 mothers of French.

IN SHERIDAN county, the total number of births returned is 18. Of these, 12 were males, and 6 females; all were white; 4 were the first child of mothers, 1 the second, 3 the third, 6 the fourth, 2 the fifth, and 1 the eighth; all were born in towns of less than 500 population, and in the country; there were 3 twins, 1 illegitimate child, and 1 still-birth; 3 fathers were between 21 and 25 years of age, 3 between 26 and 30, 10 between 30 and 35, and 2 between 46 and 50; 2 mothers were between 16 and 20 years of age, 4 between 21 and 25, 6 between 26 and 30, 4 between 31 and 35, and 2 between 36 and 40; 16 fathers and 16 mothers were of American nationality, 1 father and 1 mother of Scotch, and 1 father and 1 mother of German.

IN SHERMAN county, the total number of births returned is 56. Of these, 29 were males, and 27 females; 55 were white, and 1 colored; 19 were the first child of mothers, 14 the second, 7 the third, 6 the fourth, 3 the fifth, 3 the sixth, 3 the seventh, and 1 the eighth; all were born in towns of less than 500 population, and in the country; there were 2 still-births; 8 fathers were between 21 and 25 years of age, 24 between 26 and 30, 13 between 31 and 35, 7 between 36 and 40, 2 between 41 and 45, and 2 between 46 and 50; 7 mothers were between 16 and 20 years of age, 19 between 21 and 25, 22 between 26 and 30, 4 between 31 and 35, and 4 between 36 and 40; 51 fathers and 53 mothers were of American nationality, 1 father of Scotch, 1 father and 2 mothers of German, and 3 fathers and 1 mother of Scandinavian.

IN STEVENS county, the total number of births returned is 11. Of these, 7 were males and 4 were females; all were white; 7 were the first child of mothers, 1 the

second, 1 the fifth, 1 the sixth, and 1 the eleventh or more; 1 father was under 20 years of age, 3 between 26 and 30, 3 between 31 and 35, and 3 between 36 and 40; 1 mother was between 16 and 20, 1 between 21 and 25, 4 between 26 and 30, 4 between 31 and 35, and 1 between 36 and 40; the parents were all of American nationality.

In THOMAS county, the total number of births returned is 150. Of these, 82 were males, and 68 females; all were white; 49 were the first child of mothers, 32 the second, 17 the third, 20 the fourth, 8 the fifth, 7 the sixth, 6 the seventh, 3 the eighth, 3 the ninth, 1 the tenth, and 2 the eleventh or more; there were 29 births in cities and towns of 500 to 5,000 population, and 121 in towns of less than 500 population, and in the country; there were six still-births, 1 illegitimate child and 6 twins; 29 fathers were between 21 and 25 years of age, 47 between 26 and 30, 34 between 31 and 35, 23 between 36 and 40, 11 between 41 and 45, 2 between 46 and 50, 1 between 51 and 55, and 2 over 55; 25 mothers were between 16 and 20 years of age, 51 between 21 and 25, 32 between 26 and 30, 16 between 31 and 35, 21 between 36 and 40, and 2 between 41 and 45; 129 fathers and 134 mothers were of American nationality, 5 fathers and 2 mothers of British North-American, 1 father and 2 mothers of English, 1 father of Irish, 3 fathers and 3 mothers of German, 6 fathers and 5 mothers of Scandinavian, 3 fathers and 3 mothers of Austrian, and 1 father of French.

In WABAUNSEE county, the total number of births returned is 188. Of these, 97 were males, and 91 females; 169 were white, and 19 colored; 61 were the first child of mothers, 33 the second, 25 the third, 17 the fourth, 19 the fifth, 12 the sixth, 13 the seventh, 6 the eighth, and 3 the ninth; there were 70 births in cities and towns of 500 to 5,000 population, and 118 in towns of less than 500 population, and in the country; there were 6 still-births, and 4 twins; 15 fathers were under 20 years of age, 40 between 21 and 25, 54 between 26 and 30, 38 between 31 and 35, 17 between 36 and 40, 17 between 41 and 45, 5 between 46 and 50, and 2 between 51 and 55; 6 mothers were under 15 years of age; 54 were between 16 and 20, 63 between 21 and 25, 36 between 26 and 30, 13 between 31 and 35, 11 between 36 and 40, and 3 between 41 and 45; 133 fathers and 137 mothers were of American nationality, 1 father of British North-American, 4 fathers and 4 mothers of English, 5 fathers and 4 mothers of Irish, 2 fathers and 1 mother of Scotch, 38 fathers and 39 mothers of German, 1 father of Austrian, 1 father of Polish, 1 father and 2 mothers of French, 3 fathers and 2 mothers of Swiss, and 1 father of Dutch.

In WASHINGTON county, the total number of births returned is 48. Of these, 28 were males, and 20 females; all were white; 12 were the first child of mothers, 8 the second, 13 the third, 8 the fourth, 3 the fifth, 3 the sixth, and 1 the eighth; 20 were born in cities and towns of 500 to 5,000 population, and 28 in towns of less than 500 population, and in the country; there was one pair of twins; 5 fathers were between 21 and 25 years of age, 12 between 26 and 30, 13 between 31 and 35, 6 between 36 and 40, 1 between 41 and 45, 7 between 46 and 50, and 2 between 51 and 55; 5 mothers were between 16 and 20 years of age, 18 between 21 and 25, 6 between 26 and 30, 8 between 31 and 35, and 7 between 36 and 40; 35 fathers and 44 mothers were of American nationality, 2 fathers of Irish, 4 fathers and 4 mothers of German, and 1 father of Polish.

In WICHITA county, the total number of births returned is 67. Of these, 46 were males, and 21 females; 66 were white, and 1 colored; 26 were the first child of mothers, 15 the second, 10 the third, 2 the fourth, 4 the fifth, 1 the seventh, 1 the tenth, and 1 the eleventh or more; there were 20 births in cities and towns of 500 to

5,000 population, and 47 in towns of less than 500, and in the country; there was 1 still-birth, 1 illegitimate child, and 1 pair of twins; 14 fathers were between 21 and 25 years of age, 21 between 26 and 30, 15 between 31 and 35, 1 between 36 and 40, 5 between 41 and 50, and 2 between 51 and 55; 6 mothers were between 16 and 20 years of age, 21 between 21 and 25, 14 between 26 and 30, 8 between 31 and 35, 3 between 36 and 40, and 4 between 41 and 45; 55 fathers and 54 mothers were of American nationality, 1 father and 3 mothers of British North-American, 1 father and 1 mother of Irish, 1 father of Scotch, and 3 fathers and 5 mothers of German.

In WILSON county, the total number of births returned is 226. Of these, 117 were males, and 108 females; all were white; 57 were the first child of mothers, 43 the second, 29 the third, 22 the fourth, 26 the fifth, 11 the sixth, 12 the seventh, 8 the eighth, 4 the ninth, 2 the tenth, and 8 the eleventh; there were 59 births in cities and towns of 500 to 5,000 population, and 167 in towns of less than 500 population and in the country; there were 11 still-births, 5 twins, and 1 triplet; 3 fathers were under 20 years of age, 40 between 21 and 25, 50 between 26 and 30, 35 between 31 and 35, 41 between 36 and 40, 26 between 41 and 45, 15 between 46 and 50, 2 between 51 and 55, and 1 over 55; 1 mother was under 15 years of age, 38 were between 16 and 20, 63 between 21 and 25, 40 between 26 and 30, 27 between 31 and 35, 36 between 36 and 40, and 8 between 41 and 45; 213 fathers and 219 mothers were of American nationality, 1 father and 2 mothers of English, 2 fathers of Irish, 7 fathers and 2 mothers of German.

In WOODSON county, the total number of births returned is 169. Of these, 90 were males, and 79 females; all were white; 41 were the first child of mothers, 37 the second, 24 the third, 16 the fourth, 15 the fifth, 10 the sixth, 11 the seventh, 4 the eighth, 6 the ninth, 1 the tenth, and 1 the eleventh or more; there were 71 births in cities and towns of 500 to 5,000 population, and 98 in towns of less than 500 population, and in the country; there were three twins; 29 fathers were between 21 and 25 years of age, 47 between 26 and 30, 34 between 31 and 35, 20 between 36 and 40, 15 between 41 and 45, 9 between 46 and 50, 5 between 51 and 55, and 2 over 55; 33 mothers were between 16 and 20 years of age, 42 between 21 and 25, 36 between 26 and 30, 27 between 31 and 35, 15 between 36 and 40, 6 between 41 and 45, and 1 over 45; 129 fathers and 131 mothers were of American nationality, 10 fathers and 11 mothers of English, 5 fathers and 1 mother of Irish, 1 mother of Scotch, 19 fathers and 17 mothers of German, 1 father of Swiss, and 1 mother of Dutch.

DEATHS.

In ANDERSON county, the total number of deaths returned is 10. Of these, 4 were males, and 6 females; all were white; of their nativity, 5 were born in Kansas, 3 in other portions of the United States, and 2 were foreign-born; 2 were married, 1 a widower, and 2 widows; they all died in towns under 5,000 and over 500 population; 1 was under 1 year of age, 3 between 1 and 5, 1 between 5 and 10, 2 between 40 and 50, 1 between 50 and 60, 1 between 60 and 70, and 1 over 90; of the number, 2 died in May, 1 in June, 4 in August, 1 in October, and 2 in November. The number dying from contagious diseases were as follows: 1 female from enteric fever, and 1 male from cholera infantum.

In ARCHISON county, the total number of deaths returned is 470. Of this number, 210 were males, 175 females, and the sex of 22 not stated; 121 were under 1 year of age, 78 between 1 and 5, 25 between 5 and 10, 14 between 10 and 15, 10 between 15

and 20, 43 between 20 and 30, 30 between 30 and 40, 26 between 40 and 50, 39 between 50 and 60, 25 between 60 and 70, 16 between 70 and 80, 10 between 80 and 90, and 2 over 90.

In CHASE county, the total number of deaths returned is 20. Of these, 8 were males, and 12 females; 16 were white, and 4 colored; 4 were born in Kansas, 13 in other portions of the United States, and 5 were foreign-born; 10 were single, 5 married, 3 widowers, and 1 a widow; 12 died in towns under 5,000 and over 500 population, and 6 in towns or villages under 500 population; 4 were under 1 year of age, 2 between 1 and 5, 4 between 5 and 10, 1 between 10 and 15, 2 between 15 and 20, 1 between 20 and 30, 1 between 40 and 50, 1 between 50 and 60, 3 between 60 and 70, and 1 between 80 and 90; of the number, 1 died in the month of January, 1 in February, 2 in March, 2 in April, 1 in May, 3 in June, 2 in July, 2 in August, 1 in September, 1 in November, and 3 in December.

In CLAY county, the total number of deaths returned is 207. Of this number, 87 were males, and 66 females, and the sex of 54 not stated; 50 were white, 7 colored, and the color of 150 not stated; of their nativity, 18 were born in Kansas, 25 in other portions of the United States, and 9 were foreign-born; 39 were single, 13 married, and 1 a widower; 78 died in towns or cities of over 5,000 population, and 129 in towns or villages under 500 population, or in the country; 48 were under 1 year of age, 40 between 1 and 5, 11 between 5 and 10, 3 between 10 and 15, 9 between 15 and 20, 19 between 20 and 30, 12 between 30 and 40, 9 between 40 and 50, 14 between 50 and 60, 14 between 60 and 70, 12 between 70 and 80, 4 between 80 and 90, and 1 over 90; of the number, 19 died in the month of January, 14 in February, 25 in March, 24 in April, 16 in May, 11 in June, 19 in July, 13 in August, 20 in September, 7 in October, 10 in November, and 29 in December. The number dying from contagious diseases are as follows: 1 male and 1 female from small-pox, 1 male from chicken-pox, 1 male from measles, 1 male from scarlet fever, 1 male from typhus fever, 1 female from influenza, 1 male from mumps, 1 male from diphtheria, 1 female from whooping-cough, 1 male from enteric fever, and 1 male from cholera infantum.

In CLOUD county, the total number of deaths returned is 10. Of this number, 6 were males, and 4 females; all were white; of their nativity, 5 were born in Kansas, 3 in other portions of the United States, and 2 were foreign-born; 7 were single, 2 married, and 1 widower; there were 8 deaths in towns under 5,000 and over 500 population, and 2 in towns or villages under 500 population and in the country; 5 were under 1 year of age, 1 between 5 and 10, 1 between 20 and 30, 1 between 30 and 40, and 2 between 60 and 70; of the number, 1 died in the month of March, 2 in April, 2 in June, 2 in August, 1 in September, 1 in October, and 1 in December. One male died from whooping-cough.

In COFFEY county, the total number of deaths returned is 16. Of these, 8 were males and 8 were females; 9 were white, and 1 colored; of their nativity, 1 was born in Kansas, 11 in other portions of the United States, and 4 were foreign-born; 2 were single, 8 married, 3 widowers, and 1 a widow; 3 died in towns under 5,000 and over 500 population, and 13 in towns or villages under 500 population, and in the country; 2 were under 1 year of age, 1 between 5 and 10, 2 between 30 and 40, 1 between 40 and 50, 3 between 50 and 60, 3 between 60 and 70, 1 between 70 and 80, 2 between 80 and 90, and 1 over 90. Of the number, 4 died in the month of January, 1 in February, 3 in March, 1 in April, 1 in May, 3 in August, 1 in September, 1 in October, and 1 in November.

In **COMANCHE** county, the total number of deaths returned is 10. Of this number, 4 were males, and 6 females; all were white; of their nativity, 3 were born in Kansas, and 5 in other portions of the United States; 4 were single, and 3 married; 2 were under 1 year of age, 2 between 1 and 5, 1 between 5 and 10, 1 between 20 and 30, 1 between 30 and 40, and 1 between 60 and 70. Of the number, 2 died in the month of January, 2 in February, 1 in June, 2 in July, 1 in September, and 2 in November. The number dying from contagious diseases, is as follows: 2 females, from enteric fever.

In **CRAWFORD** county, the total number of deaths returned is 321. Of these, 191 were males, and 129 females; 308 were white, and 7 colored; of their nativity, 119 were born in Kansas, 122 in other portions of the United States, and 59 were foreign-born; 46 were single, 64 married, 4 widowers, and 5 widows; there were 65 deaths in cities or towns over 5,000 population, 127 in towns under 5,000 and over 500 population, and 125 in towns or villages under 500 population, or in the country; 85 were under 1 year of age, 55 between 1 and 5, 11 between 5 and 10, 23 between 10 and 15, 12 between 15 and 20, 42 between 20 and 30, 39 between 30 and 40, 20 between 40 and 50, 14 between 50 and 60, 19 between 60 and 70, 9 between 70 and 80, and 3 between 80 and 90; of this number, 30 died in the month of January, 22 in February, 22 in March, 11 in April, 16 in May, 15 in June, 30 in July, 43 in August, 32 in September, 14 in October, 74 in November, and 13 in December. The number dying from contagious diseases are as follows: One male from chicken-pox, 4 males and 1 female from measles, 3 males and 4 females from scarlet fever, 1 male and 2 females from influenza, 5 males from diphtheria, 2 males and 4 females from cerebro-spinal fever, 3 males and 3 females from whooping-cough, 1 male and 2 females from continued fever, 5 males and 7 females from enteric fever, and 11 males and 10 females from cholera infantum.

In **DAVIS** county, the total number of deaths returned is 109. Of these, 65 were males and 42 females; 19 were under 1 year of age, 23 between 1 and 5, 6 between 5 and 10, 5 between 10 and 15, 4 between 15 and 20, 11 between 20 and 30, 2 between 30 and 40, 8 between 40 and 50, 10 between 50 and 60, 6 between 60 and 70, 9 between 70 and 80, 3 between 80 and 90, and 1 over 90; of the number, 5 died in the month of January, 7 in February, 9 in March, 10 in April, 7 in May, 11 in June, 11 in July, 11 in August, 9 in September, 10 in October, 5 in November, and 3 in December. The number dying from contagious diseases were as follows: 1 male from measles, 8 males from scarlet fever, 5 males and 6 females from continued fever, and 8 males and 4 females from cholera infantum.

In **DECATUR** county, the total number of deaths returned is 27. Of these, 15 were males and 12 females; all were white; of their nativity, 6 were born in Kansas, 18 in other portions of the United States, and 1 was foreign-born; 17 were single, 8 married, and 1 a widow; 6 died in towns under 5,000 and over 500 population, and 21 in towns or villages under 500 population, or in the country; 5 were under 1 year of age, 4 between 1 and 5, 1 between 5 and 10, 2 between 10 and 15, 7 between 20 and 30, 4 between 30 and 40, 2 between 50 and 60, and 2 between 60 and 70; of the number, 1 died in the month of February, 2 in March, 3 in May, 2 in July, 7 in August, 5 in September, 4 in October, 1 in November, and 2 in December. The number dying from contagious diseases were as follows: 1 female from scarlet fever, 1 male from cerebro-spinal fever, 1 male from continued fever, 3 males from enteric fever, and 1 male and 1 female from cholera infantum.

In DONIPHAN county, the total number of deaths returned is 32. Of this number 20 were males and 11 were females; 29 were white, and 3 colored; of their nativity, 14 were born in Kansas, 15 in other portions of the United States, and 1 was foreign-born; 17 were single, 12 married, 2 widows, and 1 a widower; 10 were under 1 year of age, 3 between 1 and 5, 1 between 5 and 10, 2 between 15 and 20, 2 between 20 and 30, 4 between 30 and 40, 1 between 40 and 50, 2 between 50 and 60, 3 between 60 and 70, 2 between 70 and 80, and 1 between 80 and 90; of this number, 1 died in April, 5 in July, 8 in August, 9 in September, 4 in October, 2 in November, and 3 in December. The number dying from contagious diseases were as follows: One male from cerebro-spinal fever, 3 males and 1 female from enteric fever, and 2 females from cholera infantum.

In ELK county, the total number of deaths returned is 37. Of these, 17 were males, and 20 females; all were white; of their nativity, 4 were born in Kansas, and 32 in other portions of the United States; there were 11 deaths in towns under 5,000 and over 500 population, and 26 in towns or villages under 500 population, or in the country; 4 were under 1 year of age, 8 between 1 and 5, 2 between 5 and 10, 2 between 10 and 15, 4 between 15 and 20, 6 between 20 and 30, 3 between 30 and 40, 1 between 40 and 50, 3 between 50 and 60, 2 between 60 and 70, 1 between 70 and 80, and 1 between 80 and 90; of this number, 4 died in February, 4 in March, 2 in May, 3 in June, 5 in July, 7 in August, 4 in September, 4 in October, 2 in November, and 2 in December. The number dying from contagious diseases were as follows: Two males from cerebro-spinal fever, and 1 male and 2 females from enteric fever.

In ELLIS county, the total number of deaths returned is 11. Of these, 7 were males, and 4 females; all were white; of their nativity, 3 were born in Kansas, and 8 in other portions of the United States; 7 were single, 3 married, and 1 a widow; 4 were under 1 year of age, 2 between 5 and 10, 1 between 10 and 15, 2 between 15 and 20, 1 between 20 and 30, 2 between 40 and 50, and 1 between 50 and 60; of the number, 1 died in March, 2 in April, 1 in August, 2 in October, 2 in November, and 3 in December. One female died from cholera infantum.

In ELLSWORTH county, the total number of deaths returned is 89. Of these, 49 were males, and 40 females; 86 were white, and 3 colored; of their nativity, 25 were born in Kansas, 42 in other portions of the United States, and 19 were of foreign birth; 47 were single, 31 married, 4 widowers, and 2 widows; there were 44 deaths in towns under 5,000 and over 500 population, and 44 in towns or villages under 500 population, or in the county; 17 were under 1 year of age, 12 between 1 and 5, 3 between 5 and 10, 4 between 10 and 15, 6 between 15 and 20, 10 between 20 and 30, 8 between 30 and 40, 11 between 40 and 50, 6 between 50 and 60, 8 between 60 and 70, 3 between 70 and 80, and 1 between 80 and 90; of the number, 11 died in the month of January, 5 in February, 6 in March, 5 in April, 9 in May, 3 in June, 8 in July, 13 in August, 12 in September, 5 in October, 4 in November, and 8 in December. The number dying from contagious diseases were as follows: 1 female from measles, 2 females from diphtheria, 1 male from cerebro-spinal fever, 1 female from continued fever, 1 male and 1 female from enteric fever, 2 males and 3 females from cholera infantum.

In FINNEY county, the total number of deaths returned is 32. Of this number, 16 were males, and 16 females; 31 were white, and 1 colored; of their nativity, 12 were born in Kansas, and 15 in other portions of the United States; 24 were single, and 6 married; 26 died in towns under 5,000 and over 500 population; 10 were under

1 year of age, 7 between 1 and 5, 3 between 5 and 10, 6 between 20 and 30, 2 between 30 and 40, 1 between 40 and 50, and 1 between 70 and 80; of the number, 7 died in the month of February, 6 in March, 2 in April, 1 in May, 1 in June, 6 in July, 2 in August, 2 in September, 1 in October, and 3 in November. One male and 2 females died from diphtheria, and 1 male from cholera infantum.

In FORD county, the total number of deaths returned is 84. Of this number, 47 were males, and 37 were females; all were white; of their nativity, 35 were born in Kansas, 45 in other portions of the United States, and 4 were foreign-born; 46 were single, 33 married, 2 widowers, and 3 widows; there were 42 deaths in towns under 5,000 and over 500 population, and 41 in towns or villages under 500 population, or in the country; 25 were under 1 year of age, 11 between 1 and 5, 1 between 5 and 10, 6 between 10 and 15, 5 between 15 and 20, 10 between 20 and 30, 9 between 30 and 40, 3 between 40 and 50, 5 between 50 and 60, 6 between 60 and 70, 2 between 70 and 80, and 3 between 80 and 90; of the number, 10 died in the month of January, 5 in February, 9 in March, 3 in April, 11 in May, 9 in June, 12 in July, 6 in August, 2 in September, 6 in October, 5 in November, and 8 in December. The number dying from contagious diseases is as follows: One female from scarlet fever, 1 male from diphtheria, 2 males from cerebro-spinal fever, 1 male and 1 female from whooping-cough, 2 females from continued fever, 3 males from enteric fever, 6 males and 8 females from cholera infantum.

In FRANKLIN county, the total number of deaths returned is 33. Of these, 21 were males, and 11 females; 31 were white, and 1 colored; of their nativity, 14 were born in Kansas, 12 in other portions of the United States, and 2 were foreign-born; 18 were single, 12 married, and 1 a widower; 3 were under 1 year of age, 8 between 1 and 5, 3 between 5 and 10, 4 between 15 and 20, 3 between 20 and 30, 4 between 30 and 40, 1 between 50 and 60, 2 between 60 and 70, 1 between 70 and 80, and 1 between 80 and 90; of the number, 1 died in the month of June, 5 in July, 5 in August, 8 in September, 5 in October, 4 in November, and 5 in December. The number dying from contagious diseases were as follows: Four males from diphtheria, and 4 males from enteric fever.

In GARFIELD county, the total number of deaths returned is 4. Of this number, 2 were males, and 2 females; 3 were white, and 1 colored; of their nativity, 1 was born in Kansas, and 2 in other portions of the United States; 1 was under 1 year of age, 2 between 20 and 30; of the number, 1 died in the month of January, 1 in May, 1 in July, and 1 in December.

In GRAHAM county, the total number of deaths returned is 51. Of these, 24 were males, and 26 females; 45 were white, and 6 colored; of their nativity, 23 were born in Kansas, 24 in other portions of the United States, and 3 were foreign-born; 30 were single, and 20 married; all died in towns or villages under 500 population, or in the country; 3 were under 1 year of age, 14 between 1 and 5, 3 between 5 and 10, 2 between 10 and 15, 8 between 15 and 20, 8 between 20 and 30, 4 between 30 and 40, 3 between 40 and 50, 2 between 50 and 60, 2 between 60 and 70, 1 between 70 and 80, and 1 between 80 and 90; of the number, 1 died in the month of January, 2 in March, 2 in April, 5 in May, 6 in June, 6 in July, 7 in August, 11 in September, 6 in October, and 4 in December. The number dying from contagious diseases were as follows: 4 males and 8 females from enteric fever, and 5 females from cholera infantum.

In GRAY county, the total number of deaths returned is 4. Of this number, 2 were males and 2 were females; all were white; of their nativity, 2 were born in

Kansas, and 2 in other portions of the United States; 3 were single, and 1 married; 1 was under 1 year of age, 1 between 1 and 5, 1 between 5 and 10, and 1 between 70 and 80; of this number, 1 died in the month of April, 1 in July, 1 in August, and 1 in September; 1 female died from cholera infantum.

In GREENWOOD county, the total number of deaths returned is 129. Of these, 71 were males, and 58 females; 102 were white; of their nativity, 79 were born in Kansas, 27 in other portions of the United States, and 1 was foreign-born; 64 were single, 43 married, and 4 widowers; 25 were under 1 year of age, 16 between 1 and 5, 9 between 5 and 10, 7 between 10 and 15, 12 between 15 and 20, 11 between 20 and 30, 12 between 30 and 40, 6 between 40 and 50, 6 between 50 and 60, 11 between 60 and 70, 5 between 70 and 80, and 6 between 80 and 90; of this number, 9 died in the month of January, 11 in February, 4 in March, 16 in April, 6 in May, 10 in June, 11 in July, 20 in August, 16 in September, 9 in October, 5 in November, and 13 in December. The number dying from contagious diseases is as follows: One female from whooping-cough, and 7 males and 5 females from cholera infantum.

In HARVEY county, the total number of deaths returned is 40. Of these, 24 were males and 16 females; 39 were white and one colored; of their nativity, 11 were born in Kansas, 22 in other portions of the United States, and 7 were foreign-born; 22 were single, 14 married, and 2 widowers; there were 6 deaths in cities or towns over 5,000 population, 21 in towns under 5,000 and over 500 population, and 13 in towns or villages under 500 population, or in the country; 9 were under 1 year of age, 10 between 1 and 5, 1 between 5 and 10, 5 between 15 and 20, 3 between 20 and 30, 2 between 30 and 40, 4 between 40 and 50, 1 between 50 and 60, 6 between 70 and 80, and 1 over 90; of the number, 3 died in the month of January, 2 in February, 2 in April, 2 in May, 1 in June, 5 in July, 6 in August, 2 in September, 9 in October, 6 in November, and 1 in December. The number dying from contagious diseases was as follows: 1 male from small-pox, 1 female from diphtheria, 3 males and 3 females from enteric fever, and 2 females from cholera infantum.

In HODGEMAN county, the total number of deaths returned is 17. Of these, 7 were males, and 9 were females; 13 were white, and 4 colored; of their nativity, 6 were born in Kansas, and 9 in other portions of the United States; 6 were single, 9 married, and 1 a widower; 8 died in towns under 5,000 and over 500 population, and 9 in towns under 500 population, or in the country; 5 were under 1 year of age, 1 between 1 and 5, 4 between 20 and 30, 2 between 30 and 40, 1 between 40 and 50, 1 between 50 and 60, 2 between 60 and 70, and 1 between 70 and 80; of the number, 2 died in the month of January, 4 in February, 1 in April, 3 in May, 1 in September, 1 in October, 2 in November, and 3 in December. The number dying from contagious diseases were as follows: 1 male and 1 female from enteric fever, and 1 female from cholera infantum.

In JACKSON county, the total number of deaths returned is 5. Of this number, 4 were males, and 1 female; 4 were white, and 1 black; of their nativity, 2 were born in Kansas, 1 in another part of the United States, and 2 were foreign-born; 2 were single, and 3 married; 1 was between 10 and 15 years of age, 1 between 30 and 40, 1 between 40 and 50, and 1 between 50 and 60. Of the number, 4 died in July, and 1 in October.

In JEFFERSON county, the total number of deaths returned is 24. Of this number, 15 were males, and 9 females; all were white; of their nativity, 17 were born in Kansas, and 7 in other portions of the United States; 18 were single, 4 married, 1 a

widow, and 1 a widower; 8 were under 1 year of age, 5 between 1 and 5, 4 between 5 and 10, 1 between 20 and 30, 1 between 50 and 60, 2 between 60 and 70, 1 between 70 and 80, and 2 between 80 and 90; of the number, 1 died in the month of February, 2 in April, 1 in June, 3 in July, 7 in August, 6 in September, 3 in October, 1 in November, and 1 in December. The number dying from contagious diseases were as follows: Four males and 4 females from diphtheria, 1 male and 1 female from cholera infantum.

In JEWELL county, the total number of deaths returned is 132. Of these, 62 were males, and 42 females; 131 were white; of their nativity, 1 was born in Kansas, 7 were foreign-born, and the nativity of 123 not given; 9 were single, 11 married, and the social condition of 122 not given; 131 died in towns or villages under 500 population, or in the country; 38 were under 1 year of age, 28 between 1 and 5, 5 between 5 and 10, 1 between 10 and 15, 4 between 15 and 20, 10 between 20 and 30, 13 between 30 and 40, 5 between 40 and 50, 10 between 50 and 60, 8 between 60 and 70, 8 between 70 and 80, and 5 between 80 and 90; of the number, 11 died in the month of January, 10 in February, 16 in March, 6 in April, 2 in May, 8 in June, 17 in July, 7 in August, 14 in September, 13 in October, 12 in November, and 11 in December. The number dying from contagious diseases are as follows: One female from scarlet fever, 1 male, 1 female, and 5, sex not stated, from diphtheria, 1 female from cerebro-spinal fever, 2 males and 2 females from whooping-cough, 8 males and 3 females from enteric fever, 7 males and 2 females from cholera infantum.

In JOHNSON county, the total number of deaths returned is 124. Of these, 65 were males, and 59 females; 118 were white, and 5 colored; of their nativity, 47 were born in Kansas, 69 in other portions of the United States, and 7 were foreign-born; 67 were single, 44 married, 3 widowers, and 9 widows; 40 died in towns under 5,000 and over 500 population, and 84 in towns or villages under 500 population, or in the country; 21 were under 1 year of age, 16 between 1 and 5, 10 between 5 and 10, 1 between 10 and 15, 6 between 15 and 20, 11 between 20 and 30, 12 between 30 and 40, 11 between 40 and 50, 19 between 50 and 60, 6 between 60 and 70, 4 between 70 and 80, 5 between 80 and 90, and 1 over 90; of the number, 11 died in the month of January, 12 in February, 11 in March, 7 in April, 7 in May, 5 in June, 6 in July, 16 in August, 10 in September, 9 in October, 10 in November, and 20 in December. The number dying from contagious diseases were as follows: 1 female from scarlet fever, 1 female from diphtheria, 1 female from cerebro-spinal fever, 1 male and 3 females from continued fever, 6 males and 4 females from enteric fever, 3 males and 2 females from cholera infantum.

In KIOWA county, there was 1 death returned.

In KINGMAN county, the total number of deaths returned is 62. Of these, 25 were males, and 37 females; all were white; of their nativity, 26 were born in Kansas, 32 in other portions of the United States, and 4 were foreign-born; 36 were single, 21 married, 2 widowers, and 3 widows; there were 33 deaths in cities or towns over 5,000 population, and 29 in towns or villages under 500 population, or in the country; 21 were under 1 year of age, 5 between 1 and 5, 1 between 5 and 10, 1 between 10 and 15, 4 between 15 and 20, 11 between 20 and 30, 5 between 30 and 40, 4 between 40 and 50, 4 between 50 and 60, 3 between 60 and 70, 2 between 70 and 80, and 1 between 80 and 90; of the number, 5 died in the month of January, 7 in February, 10 in March, 3 in April, 2 in May, 9 in June, 4 in July, 8 in September, 5 in October, 2 in November, and 7 in December. The number dying from contagious diseases was as follows:

1 female from diphtheria, 2 males and 2 females from enteric fever, 1 male and 1 female from cholera infantum.

In LABETTE county, the total number of deaths returned is 170. Of these, 85 were males, and 82 females; 131 white, and 18 colored; of their nativity, 50 were born in Kansas, 77 in other portions of the United States, and 4 foreign-born; 62 were single, 53 married, 9 widowers, and 9 widows; 32 died in cities or towns over 5,000 population, 63 in towns under 5,000 and over 500 population, and 75 in towns or villages under 500 population, or in the country; 27 were under 1 year of age, 22 between 1 and 5, 12 between 5 and 10, 8 between 10 and 15, 9 between 15 and 20, 17 between 20 and 30, 9 between 30 and 40, 16 between 40 and 50, 13 between 50 and 60, 11 between 60 and 70, 11 between 70 and 80, and 4 between 80 and 90; of the number, 21 died in the month of January, 14 in February, 11 in March, 20 in April, 6 in May, 10 in June, 16 in July, 16 in August, 10 in September, 22 in October, 13 in November, and 11 in December. The number dying from contagious diseases was as follows: 1 male and 1 female from scarlet fever, 1 male from typhus fever, 1 male and 2 females from diphtheria, 4 males and 3 females from cerebro-spinal fever, 1 male and 3 females from whooping-cough, 2 males and 4 females from continued fever, 5 males and 5 females from enteric fever, 3 males and 1 female from cholera infantum.

In LANE county, the total number of deaths returned is 6; all were males, and all were white; of their nativity, 1 was born in Kansas, 3 in the United States, and 2 were foreign-born; 3 were single, and 3 married; 6 died in towns or villages under 500 population, or in the country; 2 were under 1 year of age, 1 between 1 and 5, 1 between 20 and 30, 1 between 60 and 70, and 1 over 90; of the number, 1 died in the month of July, 1 in August, 1 in September, and 1 in December. The number dying from contagious diseases were as follows: 2 males from enteric fever, and 2 males from cholera infantum.

In LEAVENWORTH county, the total number of deaths returned is 37. Of these, 21 were males, and 16 females; 33 were white, and 4 colored; of their nativity, 14 were born in Kansas, 13 in other portions of the United States, and 8 were foreign-born; 20 were single, 10 married, 5 widows, and 2 widowers; 8 were under 1 year of age, 5 between 1 and 5, 2 between 5 and 10, 1 between 15 and 20, 2 between 20 and 30, 1 between 30 and 40, 2 between 40 and 50, 4 between 50 and 60, 6 between 60 and 70, 2 between 70 and 80, 2 between 80 and 90, and 1 over 100; of the number, 1 died in June, 10 in July, 6 in August, 6 in September, 4 in October, 6 in November, and 4 in December. The number dying from contagious diseases was as follows: 2 males from scarlet fever, 2 females from enteric fever, and 3 males and 1 female from cholera infantum.

In LINCOLN county, the total number of deaths returned is 77. Of these, 34 were males, and 43 females; 71 were white; of their nativity, 29 were born in Kansas, 22 in other portions of the United States, and 3 were foreign-born; 40 were single, 26 married, 3 widowers, and 1 a widow; there were 21 deaths in towns under 5,000 and over 500 population, and 56 in towns and villages under 500 population, or in the country; 19 were under 1 year of age, 10 between 1 and 5, 2 between 5 and 10, 3 between 10 and 15, 4 between 15 and 20, 6 between 20 and 30, 6 between 30 and 40, 7 between 40 and 50, 7 between 50 and 60, 2 between 60 and 70, 5 between 70 and 80, and 4 between 80 and 90; of the number, 10 died in the month of January, 7 in February, 8 in March, 4 in April, 2 in May, 6 in June, 6 in July, 13 in August, 5 in September, 6 in October, 4 in November, and 6 in December. The number dying

from contagious diseases was as follows: Two females from cerebro-spinal fever, 1 male from whooping-cough, 1 male and 2 females from enteric fever, 3 males and 1 female from cholera infantum.

In LINN county, the total number of deaths returned is 84. Of these, 44 were males, and 38 were females; 66 were white, and 11 colored; of their nativity, 32 were born in Kansas, 48 in other portions of the United States, and 1 was foreign-born; 47 were single, 32 married, 1 a widower, and 3 widows; there were 34 deaths in towns under 5,000 and over 500 population, and 50 in towns and villages under 500 population, or in the country; 10 were under 1 year of age, 18 between 1 and 5, 2 between 5 and 10, 6 between 10 and 15, 9 between 15 and 20, 10 between 20 and 30, 7 between 30 and 40, 3 between 40 and 50, 8 between 50 and 60, 4 between 60 and 70, and 7 between 70 and 80; of the number, 8 died in the month of January, 6 in February, 9 in March, 9 in April, 1 in May, 5 in June, 12 in July, 12 in August, 8 in September, 7 in October, 3 in November, and 4 in December. The number dying from contagious diseases was as follows: Two females from scarlet fever, 1 male from mumps, 1 female from diphtheria, 2 males from cerebro-spinal fever, 1 male from whooping-cough, 3 males and 2 females from continued fever, 1 male and 6 females from enteric fever, and 3 males from cholera infantum.

In LYON county, the total number of deaths returned is 71. Of these, 28 were males, and 42 females; 67 were white, and 4 colored; of their nativity, 19 were born in Kansas, 30 in other portions of the United States, and 5 were foreign-born; 35 were single, 14 married, 3 widowers, and 2 widows; there were 42 deaths in cities or towns over 5,000 population, and 31 in towns or villages under 500 population, or in the country; 10 were under 1 year of age, 2 between 1 and 5, 2 between 5 and 10, 4 between 10 and 15, 3 between 15 and 20, 7 between 20 and 30, 7 between 30 and 40, 9 between 40 and 50, 9 between 50 and 60, 1 between 60 and 70, 8 between 70 and 80, 4 between 80 and 90, and 1 over 90; of the number, 4 died in the month of January, 3 in February, 12 in March, 9 in April, 1 in May, 9 in June, 8 in July, 6 in August, 8 in September, 6 in October, 5 in November, and 3 in December. The number dying from contagious diseases was as follows: 3 males and 8 females from scarlet fever, 1 male and 5 females from typhus fever, 1 male from diphtheria, 1 male and 1 female from cholera infantum.

In MARION county, the total number of deaths returned is 39. Of these, 22 were males, and 17 females; all were white; of their nativity, 24 were born in Kansas, and 7 in other portions of the United States, and 8 were foreign-born; 25 were single, 10 married, 1 a widower, and 3 widows; there were 39 deaths in towns under 5,000 and over 500 population; 15 were under 1 year of age, 7 between 1 and 5, 2 between 10 and 15, 2 between 20 and 30, 2 between 30 and 40, 7 between 50 and 60, 3 between 60 and 70, and 1 between 80 and 90; of the number, 5 died in the month of January, 5 in February, 5 in March, 3 in April, 6 in May, 1 in June, 6 in August, 1 in September, 6 in October, and 1 in December. The number dying from contagious diseases was as follows: 1 male and 1 female from cerebro-spinal fever, 1 male and 1 female from whooping-cough, 1 male from continued fever, 1 male from enteric fever, 2 males and 1 female from cholera infantum.

In MARSHALL county, the total number of deaths returned is 180. Of these, 126 were males and 51 females; 164 were white and 4 colored; of their nativity, 98 were born in Kansas, 67 in other portions of the United States, and 2 were foreign-born; 110 were single, 47 married, 4 widowers, and 4 widows; 64 died in towns under 5,000

and over 500 population, and 116 in towns under 500 population, or in the country; 37 were under 1 year of age, 29 between 1 and 5, 19 between 5 and 10, 8 between 10 and 15, 12 between 15 and 20, 15 between 20 and 30, 7 between 30 and 40, 13 between 40 and 50, 9 between 50 and 60, 10 between 60 and 70, 8 between 70 and 80, and 4 between 80 and 90; of the number, 22 died in the month of January, 9 in February, 15 in March, 7 in April, 12 in May, 8 in June, 18 in July, 16 in August, 18 in September, 24 in October, 14 in November, and 17 in December. The number dying from contagious diseases was as follows: 2 males from influenza, 3 males and 1 female from diphtheria, 7 males and 1 female from cerebro-spinal fever, 5 males from whooping-cough, 4 males from continued fever, 2 males from enteric fever, 5 males and 3 females from cholera infantum.

In McPHERSON county, the total number of deaths returned is 101. Of these, 55 were males and 44 females; 1 was under 1 year of age, 32 between 1 and 5, 8 between 5 and 10, 1 between 10 and 15, 8 between 15 and 20, 8 between 20 and 30, 5 between 30 and 40, 7 between 40 and 50, 9 between 50 and 60, 7 between 60 and 70, 10 between 70 and 80, 2 between 80 and 90, and 1 over 90; of the number, 13 died in the month of January, 12 in February, 15 in March, 9 in April, 8 in May, 6 in June, 11 in July, 10 in August, 4 in September, 6 in October, 5 in November, and 3 in December. The number dying from contagious diseases was as follows: 2 males and 5 females from small-pox, 1 male from scarlet fever, 3 males and 1 female from typhus fever, 6 males and 5 females from diphtheria, 3 males from cerebro-spinal fever, 1 male from whooping-cough, and 1 female from cholera infantum.

In MIAMI county, the total number of deaths returned is 114. Of these, 70 were males, and 44 females; 100 were white, and 11 colored; of their nativity, 36 were born in Kansas, 58 in other portions of the United States, and 5 were foreign-born; 64 were single, 33 married, 3 widowers, and 5 widows; 25 died in cities or towns over 5,000 population, 47 in towns under 5,000 and over 500 population, and 42 in towns or villages under 500 population, or in the country; 19 were under 1 year of age, 16 between 1 and 5, 7 between 5 and 10, 4 between 10 and 15, 2 between 15 and 20, 18 between 20 and 30, 9 between 30 and 40, 11 between 40 and 50, 6 between 50 and 60, 8 between 60 and 70, 4 between 70 and 80, and 3 between 80 and 90. Of the number, 9 died in the month of January, 6 in February, 8 in March, 7 in April, 11 in May, 5 in June, 21 in July, 18 in August, 11 in September, 9 in October, 6 in November, and 3 in December. The number dying from contagious diseases were as follows: Three males and 2 females from scarlet fever, 1 male from typhus fever, 1 male and 2 females from diphtheria, 1 male from cerebro-spinal fever, 1 male and 1 female from whooping-cough, 1 male and 1 female from continued fever, 1 male from enteric fever, and 2 males and 2 females from cholera infantum.

In MONTGOMERY county, the total number of deaths returned is 73. Of these, 34 were males, and 37 females; 61 were white, and 7 colored; of their nativity, 34 were born in Kansas, and 35 in other portions of the United States; 42 were single, 22 married, 4 widowers, and 3 widows; there were 53 deaths in towns under 5,000 and over 500 population, and 19 in towns or villages under 500 population, or in the country; 21 were under 1 year of age, 11 between 1 and 5, 3 between 5 and 10, 2 between 10 and 15, 10 between 20 and 30, 4 between 30 and 40, 4 between 40 and 50, 5 between 50 and 60, 5 between 60 and 70, 2 between 70 and 80, and 2 between 80 and 90. Of the number, 1 died in the month of January, 4 in February, 2 in March, 6 in April, 2 in May, 4 in June, 12 in July, 13 in August, 10 in September, 9 in October, 8 in November, and 2 in December. The number dying from contagious dis-

eases was as follows: One male and 1 female from diphtheria, 2 males and 5 females from enteric fever, 6 males and 9 females from cholera infantum.

In NEMAHA county, the total number of deaths returned is 60. Of this number, 35 were males, and 25 females; 58 were white, and the color of 2 not stated; of their nativity, 26 were born in Kansas, 29 in other portions of the United States, and 2 were foreign-born; 35 were single, 20 married, and 4 widows; there were 9 deaths in towns under 5,000 and over 500 population, and 51 in towns or villages under 500 population, and in the country; 9 were under 1 year of age, 12 between 1 and 5, 5 between 5 and 10, 4 between 10 and 15, 4 between 15 and 20, 3 between 20 and 30, 3 between 30 and 40, 3 between 40 and 50, 3 between 50 and 60, 1 between 60 and 70, 5 between 70 and 80, and 2 between 80 and 90; of the number, 8 died in the month of January, 6 in February, 4 in March, 1 in April, 1 in May, 1 in June, 2 in July, 3 in August, 1 in September, 2 in October, 5 in November, and 6 in December. The number dying from contagious diseases was as follows: One female from measles, 3 males from diphtheria, 1 female from cerebro-spinal fever, 1 female from continued fever, 2 males and 3 females from enteric fever, 1 male and 1 female from cholera infantum.

In NEOSHO county, the total number of deaths returned is 16. Of these, 8 were males, and 8 females; 15 were white, and 1 colored; of their nativity, 8 were born in Kansas, 6 in other portions of the United States, and 2 were foreign-born; 9 were single, 4 married, and 3 widows; 7 were under 1 year of age, 1 between 1 and 5, 1 between 10 and 15, 3 between 20 and 30, 1 between 30 and 40, 2 between 50 and 60, and 1 between 70 and 80; of the number, 6 died in the month of August, 3 in September, 3 in October, and 4 in December. The number dying from contagious diseases was as follows: Two males from enteric fever, 2 males and 1 female from cholera infantum.

In NORTON county, the total number of deaths returned is 24. Of these, 13 were males, and 11 females; 22 were white; of their nativity, 8 were born in Kansas, 8 in other portions of the United States, and 4 were foreign-born; 7 were single, 9 married, and 2 widows; 4 died in towns under 5,000 and over 500 population, and 18 in towns or villages under 500 population, or in the country; 2 were under 1 year of age, 2 between 1 and 5, 3 between 5 and 10, 4 between 20 and 30, 2 between 40 and 50, 1 between 50 and 60, 3 between 60 and 70, 3 between 70 and 80, and 1 between 80 and 90; of the number, 4 died in the month of January, 2 in February, 3 in March, 1 in April, 2 in July, 1 in August, 1 in September, 3 in October, 2 in November, and 5 in December. One male died from whooping-cough, and 1 female from cholera infantum.

In OSAGE county, the total number of deaths returned is 72. Of this number, 44 were males and 28 females; 69 were white and 2 colored; of their nativity, 21 were born in Kansas, 32 in other portions of the United States, and 16 were foreign-born; 31 were single, 30 married, 5 widows, and 2 widows; there were 42 deaths in towns under 5,000 and over 500 population, and 30 in towns or villages under 500 population, or in the country; 9 were under 1 year of age, 12 between 1 and 5, 1 between 5 and 10, 1 between 10 and 15, 2 between 15 and 20, 9 between 20 and 30, 6 between 30 and 40, 8 between 40 and 50, 6 between 50 and 60, 8 between 60 and 70, 3 between 70 and 80, 2 between 80 and 90, and 1 over 90; of the number, 7 died in the month of January, 6 in February, 11 in March, 4 in April, 5 in June, 6 in July, 11 in August, 7 in September, 4 in October, 1 in November, and 10 in December. The number

dying from contagious diseases was as follows: 2 males and 2 females from diphtheria, 1 male from cerebro-spinal fever, 2 males from continued fever, 3 females from enteric fever, and 1 male and 1 female from cholera infantum.

In OSBORNE county, the total number of deaths returned is 79. Of these, 47 were males, and 32 females; 78 were white, and 1 colored; of their nativity, 30 were born in Kansas, 33 in other portions of the United States, and 7 were foreign-born: 44 were single, 27 married, 2 widowers, and 2 widows; 26 died in towns under 5,000 and over 500 population, and 54 in towns or villages under 500 population, or in the country; 22 were under 1 year of age, 9 between 1 and 5, 1 between 5 and 10, 5 between 10 and 15, 2 between 15 and 20; 2 between 20 and 30, 3 between 30 and 40, 6 between 40 and 50, 3 between 50 and 60, 8 between 60 and 70, 5 between 70 and 80, 10 between 80 and 90, and 2 over 90; of the number, 3 died in the month of January, 4 in February, 6 in March, 7 in April, 5 in May, 8 in June, 11 in July, 15 in August, 6 in September, 10 in October, 3 in November, and 2 in December. The number dying from contagious diseases was as follows: One female from measles, 3 females from diphtheria, 2 males from cerebro-spinal fever, 2 males and 2 females from whooping-cough, 4 males and 1 female from enteric fever, 4 males and 2 females from cholera infantum.

In PAWNEE county, the total number of deaths returned is 23; 3 were males, 1 a female, and the sex of 19 not given: 20 were white, and 3 colored; of their nativity, 11 were born in Kansas, and 9 in different portions of the United States: 16 were single, 1 a widower, and 1 a widow; 13 died in towns under 5,000 and over 500 population, and 9 in towns or villages under 500 population, or in the country; 4 were under 1 year of age, 6 between 1 and 5, 3 between 5 and 10, 2 between 15 and 20, 3 between 20 and 30, 1 between 30 and 40, 1 between 40 and 50, 2 between 60 and 70, and 1 between 70 and 80; of the number, 1 died in the month of March, 1 in April, 2 in June, 2 in July, 5 in August, 5 in September, and 4 in October. The number dying from contagious diseases was as follows: Two from diphtheria, 1 from cerebro-spinal meningitis, 2 from enteric fever, and 5 from cholera infantum.

In PHILLIPS county, the total number of deaths returned is 108. Of these, 54 were males, and 41 females; 102 were white, and 2 colored; of their nativity, 44 were born in Kansas, and 58 in other portions of the United States, and 3 were foreign-born; 58 were single, 24 married, 3 widowers, and 2 widows; 14 died in towns under 5,000 and over 500 population, and 94 in towns under 500 population, or in the country; 26 were under 1 year of age, 21 between 1 and 5, 10 between 5 and 10, 3 between 10 and 15, 3 between 15 and 20, 9 between 20 and 30, 4 between 30 and 40, 9 between 40 and 50, 7 between 50 and 60, 7 between 60 and 70, 5 between 70 and 80, and 4 between 80 and 90. Of the number, 7 died in the month of January, 5 in February, 5 in March, 10 in April, 13 in May, 13 in June, 8 in July, 12 in August, 19 in September, 8 in October, 1 in November, and 7 in December. The number dying from contagious diseases was as follows: Four males and 3 females from measles, 2 males and 4 females from scarlet fever, 2 males and 2 females from diphtheria, 1 male from continued fever, 6 males and 1 female from enteric fever, 2 males and 3 females from cholera infantum.

In POTTAWATOMIE county, the total number of deaths returned is 103. Of this number, 45 were males, and 49 females; 91 were white, and 3 colored; of their nativity, 47 were born in Kansas, 35 in other portions of the United States, and 12 were foreign-born; 55 were single, 27 married, 2 widowers, and 7 widows; 27 died in

towns under 5,000 and over 500 population, and 70 in towns or villages under 500 population, or in the country; 25 were under 1 year of age, 13 between 1 and 5, 4 between 5 and 10, 3 between 10 and 15, 5 between 15 and 20, 7 between 20 and 30, 4 between 30 and 40, 4 between 40 and 50, 6 between 50 and 60, 5 between 60 and 70, 10 between 70 and 80, and 4 between 80 and 90. Of the number, 17 died in the month of January, 9 in February, 11 in March, 2 in April, 9 in May, 4 in June, 8 in July, 9 in August, 4 in September, 6 in October, 12 in November, and 6 in December. The number dying from contagious diseases was as follows: One male and 1 female from diphtheria, 1 from cerebro-spinal fever, 1 from whooping-cough, 2 males and 3 females from cholera infantum.

In PRATT county, the total number of deaths returned is 26. Of these, 22 were males, and 4 females; all were white; of their nativity, 10 were born in Kansas, 14 in other portions of the United States, and 2 were foreign-born; 15 were single, 8 married, and 1 a widow; there were 16 deaths in towns under 5,000 and over 500 population, and 10 in towns or villages under 500 population, or in the country; 7 were under 1 year of age, 2 between 1 and 5, 1 between 5 and 10, 1 between 15 and 20, 5 between 20 and 30, 4 between 40 and 50, 2 between 50 and 60, 1 between 60 and 70, and 1 between 70 and 80; of the number, 1 died in the month of March, 3 in April, 5 in May, 5 in June, 5 in August, 2 in September, 1 in October, 2 in November, and 1 in December; 4 males died from enteric fever, 1 male and 1 female from cholera infantum.

In RAWLINS county, the total number of deaths returned is 27. Of these, 14 were males, and 13 females; all were white; of their nativity, 3 were born in Kansas, 16 in other portions of the United States, and 8 were foreign-born; 11 were single, 11 married, 1 a widower, and 2 widows; 27 died in towns or villages under 500 population, or in the country; 6 were under 1 year of age, 3 between 1 and 5, 1 between 10 and 15, 4 between 20 and 30, 6 between 30 and 40, 4 between 40 and 50, 2 between 50 and 60, and 1 between 60 and 70; of the number, 4 died in the month of February, 2 in March, 2 in May, 4 in July, 5 in August, 3 in September, 3 in October, 2 in November, and 1 in December; 1 male died from enteric fever.

In RUSSELL county, the total number of deaths returned is 36. Of this number, 20 were males, and 14 females; 33 were white, and 3 colored; of their nativity, 10 were born in Kansas, 21 in other portions of the United States, and 4 were foreign-born; 19 were single, 14 married, and 1 a widow; 9 died in towns under 5,000 and over 500 population, and 26 in towns or villages under 500 population, or in the country; 10 were under 1 year of age, 5 between 1 and 5, 2 between 5 and 10, 2 between 15 and 20, 3 between 20 and 30, 4 between 30 and 40, 1 between 40 and 50, 2 between 50 and 60, 1 between 60 and 70, 2 between 70 and 80, and 1 between 80 and 90; of the number, 5 died in the month of January, 1 in February, 1 in March, 3 in April, 1 in June, 4 in July, 4 in August, 4 in September, 3 in October, 3 in November, and 7 in December. The number dying from contagious diseases was as follows: One female from scarlet fever, 1 male and 1 female from typhus fever, 2 males and 2 females from diphtheria, 1 male from cerebro-spinal fever, 1 male from enteric fever, and 1 male from cholera infantum.

In SALINE county, the total number of deaths returned is 39. Of these, 22 were males, and 16 females; 37 were white, and 2 colored; of their nativity, 21 were born in Kansas, 16 in other portions of the United States, and 2 were foreign-born; 27 were single, 10 married, and 2 widows; there were 19 deaths in cities or towns over

5,000 population, and 20 in towns or villages under 500 population, or in the country; 9 were under 1 year of age, 4 between 1 and 5, 4 between 5 and 10, 2 between 10 and 15, 2 between 15 and 20, 4 between 20 and 30, 4 between 30 and 40, 5 between 40 and 50, 2 between 60 and 70, and 1 between 80 and 90; of the number, 1 died in the month of January, 2 in February, 1 in March, 3 in April, 1 in May, 4 in June, 4 in July, 3 in August, 1 in September, 6 in October, 2 in November, and 4 in December. The number dying from contagious diseases were as follows: One male from continued fever, 4 females from enteric fever, 2 males and 1 female from cholera infantum.

In SEDGWICK county, the total number of deaths returned is 49. Of these, 30 were males, and 17 females; 39 were white, and 8 colored; of their nativity, 12 were born in Kansas, 22 in other portions of the United States, and 5 were foreign-born; 29 were single, 16 married, 1 a widower, and 1 a widow; 12 were under 1 year of age, 4 between 1 and 5, 1 between 5 and 10, 1 between 10 and 15, 5 between 15 and 20, 10 between 20 and 30, 2 between 30 and 40, 2 between 40 and 50, 3 between 50 and 60, 2 between 60 and 70, 4 between 70 and 80, and 2 between 80 and 90; of the number, 1 died in the month of January, 3 in February, 6 in March, 1 in April, 4 in May, 2 in June, 3 in July, 16 in August, 3 in September, 4 in October, 4 in November, and 1 in December. The number dying from contagious diseases was as follows: Eight males and 2 females from small-pox, 1 female from scarlet fever, 2 males and 2 females from enteric fever, 2 males and 1 female from cholera infantum.

In SHAWNEE county, the total number of deaths returned is 180. Of these, 94 were males, and 86 females; 144 were white, and 28 colored; of their nativity, 44 were born in Kansas, 99 in other portions of the United States, and 23 were foreign-born; 92 were single, 53 married, 5 widowers, and 12 widows; there were 148 deaths in cities over 5,000 population, and 32 in towns or villages under 500 population, or in the country; 26 were under 1 year of age, 24 between 1 and 5, 2 between 5 and 10, 3 between 10 and 15, 11 between 15 and 20, 27 between 20 and 30, 13 between 30 and 40, 17 between 40 and 50, 21 between 50 and 60, 12 between 60 and 70, 9 between 70 and 80, 2 between 80 and 90; of the number, 10 died in the month of January, 16 in February, 21 in March, 11 in April, 8 in May, 14 in June, 32 in July, 35 in August, 11 in September, 4 in October, 17 in November, and 1 in December. The number dying from contagious diseases was as follows: One female from scarlet fever, 2 males from diphtheria, 3 males from cerebro-spinal fever, 1 female from whooping-cough, 3 males and 6 females from continued fever, 1 male and 4 females from enteric fever, 3 males and 9 females from cholera infantum.

In SHERIDAN county, the number of deaths returned is 30. Of these, 16 were males, 13 females; all were white; of their nativity, 28 were born in the United States, and 2 were foreign-born; 17 were single, and 11 married; all died in towns or villages under 500 population, or in the country; 6 were under 1 year of age, 1 between 1 and 5, 1 between 5 and 10, 2 between 10 and 15, 1 between 15 and 20, 5 between 20 and 30, 5 between 30 and 40, 2 between 40 and 50, 2 between 60 and 70, 3 between 80 and 90; of the number, 1 died in the month of January, 3 in March, 1 in April, 1 in May, 2 in June, 8 in July, 5 in August, 2 in September, 1 in October, 5 in November, and 1 in December. The number dying from contagious diseases were as follows: 2 males and 3 females from typhus fever, 1 male from cerebro-spinal fever, 1 female from whooping-cough, 2 males from continued fever, 4 males and 3 females from cholera infantum.

In SHERMAN county, the total number of deaths returned is 24. Of these, 9 were males, and 15 females; all were white; of their nativity, 6 were born in Kansas, 16 in other portions of the United States, and 2 were foreign-born; 7 were single, 14 married, and 1 a widow; 11 died in towns under 5,000 and over 500 population, and 13 in towns or villages under 500 population, or in the country; 6 were under 1 year of age, 1 between 5 and 10, 4 between 20 and 30, 4 between 30 and 40, 3 between 40 and 50, 4 between 50 and 60, and 1 between 70 and 80; of the number, 5 died in the month of May, 5 in June, 4 in July, 1 in August, 2 in October, 4 in November, and 3 in December. The number dying from contagious diseases was as follows: 1 male from scarlet fever, 1 male and 1 female from cerebro-spinal fever, and 2 males from cholera infantum.

In THOMAS county, the total number of deaths returned is 73. Of these, 34 were males, and 37 females; all were white; of their nativity, 27 were born in Kansas, 39 in other portions of the United States, and 3 were foreign-born; 42 were single, 23 married, 1 a widower, and 1 a widow; there were 14 deaths in towns under 5,000 and over 500 population, and 59 in towns or villages under 500 population, or in the country; 22 were under 1 year of age, 8 between 1 and 5, 1 between 5 and 10, 4 between 10 and 15, 6 between 15 and 20, 12 between 20 and 30, 4 between 30 and 40, 8 between 40 and 50, 2 between 50 and 60, 3 between 60 and 70, and 1 between 80 and 90; of the number, 3 died in the month of January, 4 in February, 8 in March, 9 in April, 4 in May, 4 in June, 10 in July, 9 in August, 8 in September, 6 in October, 5 in November, and 3 in December. The number dying from contagious diseases was as follows: 1 female from diphtheria, 2 males from cerebro-spinal fever, 3 males and 4 females from continued fever, 2 males and 1 female from enteric fever, 4 males and 5 females from cholera infantum.

In WABAUNSEE county, the total number of deaths returned is 111. Of these, 76 were males, and 35 females; 103 were white, and 8 colored; of their nativity, 48 were born in Kansas, 53 in other portions of the United States, and 8 were foreign-born; 48 were single, 48 married, 8 widowers, and 2 widows; 42 died in towns under 5,000 and over 500 population, and 69 in towns or villages under 500 population, or in the country; 18 were under 1 year of age, 23 between 1 and 5, 2 between 5 and 10, 4 between 10 and 15, 5 between 15 and 20, 14 between 20 and 30, 21 between 30 and 40, 15 between 40 and 50, 3 between 50 and 60, 4 between 60 and 70, and 1 between 70 and 80; of the number, 11 died in the month of January, 4 in February, 14 in March, 10 in April, 4 in May, 7 in June, 7 in July, 8 in August, 18 in September, 6 in October, 14 in November, and 4 in December. The number dying from contagious diseases was as follows: 1 male from measles, 6 males and 3 females from diphtheria, 1 male and 1 female from whooping-cough, 5 males and 1 female from enteric fever, and 8 males and 3 females from cholera infantum.

In WASHINGTON county, the total number of deaths returned is 31. Of these, 16 were males, and 15 females; all were white; of their nativity, 10 were born in Kansas, 15 in other portions of the United States, and 4 were foreign-born; 12 were single, 5 married, 1 a widower, and 2 widows; all died in towns or villages under 500 population, or in the country; 3 were under 1 year of age, 3 between 1 and 5, 3 between 5 and 10, 4 between 10 and 15, 3 between 15 and 20, 3 between 20 and 30, 2 between 30 and 40, 2 between 40 and 50, 3 between 50 and 60, 1 between 60 and 70, and 2 between 70 and 80; of the number, 2 died in the month of January, 2 in February, 2 in March, 4 in April, 4 in May, 1 in June, 3 in July, 5 in August, 4 in September, 2 in October, and 1 in December. The number dying from contagious diseases were as

follows: 1 male from measles, 2 males from influenza, 1 male and 1 female from diphtheria, 2 males and 1 female from continued fever, and 1 female from cholera infantum.

In WICHITA county, the total number of deaths returned is 25. Of these, 13 were males and 12 females; all were white; of their nativity, 9 were born in Kansas, 7 in other portions of the United States, and 2 were foreign-born; 12 were single, 5 married, 1 a widower, and 1 a widow; 6 died in towns under 5,000 and over 500 population, and 19 in towns or villages under 500 population, or in the country; 7 were under 1 year of age, 2 between 1 and 5, 1 between 5 and 10, 2 between 10 and 15, 4 between 20 and 30, 2 between 40 and 50, 1 between 50 and 60, and 2 between 60 and 70; of the number, 2 died in the month of January, 2 in March, 6 in April, 1 in May, 3 in June, 1 in July, 2 in August, 4 in September, 2 in October, 2 in November, and 1 in December. One male died from enteric fever, and 1 male and 3 females from cholera infantum.

In WILSON county, the total number of deaths returned is 93. Of these, 51 were males, and 41 females; 89 were white, and 1 colored; of their nativity, 46 were born in Kansas, 40 in other portions of the United States, and 3 were foreign-born; 64 were single, 24 married, 3 widowers, and 2 widows; there were 22 deaths in towns under 5,000 and over 500 population, and 71 in towns or villages under 500 population, or in the country; 21 were under 1 year of age, 21 between 1 and 5, 4 between 5 and 10, 4 between 10 and 15, 5 between 15 and 20, 12 between 20 and 30, 6 between 30 and 40, 7 between 40 and 50, 5 between 50 and 60, 4 between 60 and 70, and 3 between 70 and 80; of the number, 16 died in the month of January, 8 in February, 11 in March, 4 in April, 5 in May, 1 in June, 8 in July, 14 in August, 7 in September, 5 in October, 8 in November, and 6 in December. The number dying from contagious diseases was as follows: 1 female from measles, 1 male and 1 female from scarlet fever, 2 males and 1 female from cerebro-spinal fever, 1 female from diphtheria, 1 male and 1 female from whooping-cough, 1 male and 3 females from continued fever, 4 males and 2 females from enteric fever, 3 males and 4 females from cholera infantum.

In WOODSON county, the total number of deaths returned is 102. Of these, 44 were males, and 47 females; 99 were white, and 3 colored; of their nativity, 30 were born in Kansas, 21 in other portions of the United States, and 2 were foreign-born; 37 were single, 21 married, and 4 widows; there were 39 deaths in towns under 5,000 and over 500 population, and 63 in towns or villages under 500 population, or in the country; 26 were under 1 year of age, 20 between 1 and 5, 2 between 5 and 10, 3 between 15 and 20, 11 between 20 and 30, 7 between 30 and 40, 10 between 40 and 50, 8 between 50 and 60, 5 between 60 and 70, 6 between 70 and 80, and 4 between 80 and 90; of the number, 11 died in the month of January, 6 in February, 9 in March, 6 in April, 4 in May, 14 in June, 4 in July, 8 in August, 8 in September, 13 in October, 11 in November, and 8 in December. The number dying from contagious diseases was as follows: 1 male from continued fever, 1 male and 2 females from enteric fever, 5 males and 4 females from cholera infantum.

MARRIAGES.

In CHASE county, the total number of marriages returned is 13, 11 of whom were white, and 2 colored. Of this number, 9 grooms and 12 brides were of American nationality, while 4 grooms and 1 bride were of foreign nationality; 4 brides were

under 20 years of age, 5 grooms and 5 brides between 20 and 25, 4 grooms and 2 brides between 25 and 30, 3 grooms and 1 bride between 30 and 40, and 1 groom and 1 bride between 60 and 70.

In CLAY county, the total number of marriages returned is 119, of whom 117 were white, 1 colored, and the color of 1 not reported. Of this number, 86 grooms and 81 brides were of American nationality, while 33 grooms and 38 brides were of foreign nationality; 1 groom and 37 brides were under 20 years of age, 34 grooms and 32 brides between 20 and 25, 42 grooms and 27 brides between 25 and 30, 25 grooms and 14 brides between 30 and 40, 7 grooms and 7 brides between 40 and 50, 5 grooms and 1 bride between 50 and 60, 4 grooms and 1 bride between 60 and 70, and 1 groom between 70 and 80.

In CLARK county, the total number of marriages returned is 34, all of whom were white; 28 grooms and 28 brides were of American nationality, while 4 grooms and 4 brides were of foreign nationality; 5 brides were under 20 years of age, 15 grooms and 19 brides between 20 and 25, 14 grooms and 3 brides between 25 and 30, 8 grooms and 4 brides between 30 and 40, 1 groom and 2 brides between 40 and 50, and 1 groom and 1 bride between 50 and 60.

In COFFEY county, the total number of marriages returned is 150, of whom 146 were white, and 4 colored. Of this number, 148 grooms and 149 brides were of American nationality, while 2 grooms and 1 bride were of foreign nationality; 50 brides were under 20 years of age, 64 grooms and 53 brides were between 20 and 25, 48 grooms and 26 brides between 25 and 30, 19 grooms and 10 brides between 30 and 40, 9 grooms and 7 brides between 40 and 50, 8 grooms and 6 brides between 50 and 60, and 1 groom between 70 and 80.

In COMANCHE county, the total number of marriages returned is 40, all of whom were white. Of this number, 39 grooms and 40 brides were of American nationality, while 1 groom was of foreign nationality; 20 brides were under 20 years of age, 14 grooms and 13 brides were between 20 and 25, 18 grooms and 3 brides between 25 and 30, 8 grooms and 2 brides between 30 and 40, and 2 grooms between 40 and 50.

In DAVIS county, the total number of marriages returned is 72, of whom 71 were white and 1 colored. Of this number, 58 grooms and 61 brides were of American nationality, while 14 grooms and 11 brides were of foreign nationality; 19 brides were under 20 years of age, 17 grooms and 32 brides between 20 and 25, 32 grooms and 10 brides between 25 and 30, 13 grooms and 7 brides between 30 and 40, 6 grooms and 1 bride between 40 and 50, 1 groom and 3 brides between 50 and 60, 1 groom between 60 and 70, and 1 groom between 70 and 80.

In DECATUR county, the total number of marriages returned is 82, all of whom were white. Of this number, 47 grooms and 49 brides were of American nationality, while 10 grooms and 8 brides were of foreign nationality, and the nationality of 25 grooms and 25 brides not reported; 2 grooms and 27 brides were under 20 years of age, 35 grooms and 36 brides between 20 and 25, 23 grooms and 7 brides between 25 and 30, 16 grooms and 10 brides between 30 and 40, 4 grooms between 40 and 50, and 1 groom and 1 bride between 50 and 60.

In ELK county, the total number of marriages returned is 95, all of whom were white and of American nationality. Of this number, 1 groom and 37 brides were

under 20 years of age, 45 grooms and 43 brides between 20 and 25, 18 grooms and 4 brides between 25 and 30, 23 grooms and 9 brides between 30 and 40, 5 grooms and 2 brides between 40 and 50, and 3 grooms between 50 and 60.

In **ELLIS** county, the total number of marriages returned is 67, all of whom were white. Of the number, 37 grooms and 39 brides were of American nationality, while 28 grooms and 27 brides were of foreign nationality; 25 brides were under 20 years of age, 41 grooms and 42 brides were between 20 and 25, 4 grooms between 25 and 30, and 17 grooms between 30 and 40.

In **ELLSWORTH** county, the total number of marriages returned is 85, of whom 84 were white and 1 colored. Of the number, 65 grooms and 70 brides were of American nationality, while 20 grooms and 15 brides were of foreign nationality; 36 brides were under 20 years of age, 33 grooms and 29 brides between 20 and 25, 30 grooms and 13 brides between 25 and 30, 13 grooms and 5 brides between 30 and 40, 4 grooms and 3 brides between 40 and 50, 3 grooms between 50 and 60, and 1 groom between 60 and 70.

In **FINNEY** county, the total number of marriages returned is 61, of whom 33 were white, and the color of 28 not reported. Of the number, 60 grooms and 58 brides were of American nationality, while 1 groom and 3 brides were of foreign nationality; 1 groom and 21 brides were under 20 years of age, 12 grooms and 25 brides between 20 and 25, 19 grooms and 7 brides between 25 and 30, 23 grooms and 7 brides between 30 and 40, 2 grooms and 3 brides between 40 and 50, 2 grooms between 50 and 60, and 1 groom between 60 and 70.

In **FORD** county, the total number of marriages returned is 66, of whom 65 were white, and 1 colored. Of the number, 59 grooms and 60 brides were of American nationality, while 7 grooms and 6 brides were of foreign nationality; 2 grooms and 33 brides were under 20 years of age, 19 grooms and 26 brides were between 20 and 25, 29 grooms and 8 brides between 25 and 30, 10 grooms and 4 brides between 30 and 40, and 4 grooms and 3 brides between 40 and 50.

In **GARFIELD** county, the total number of marriages returned is 22, all of whom were white, and of American nationality. Of the number, 1 groom and 9 brides were under 20 years of age, 4 grooms and 4 brides between 20 and 25, 9 grooms and 4 brides between 25 and 30, 5 grooms and 4 brides between 30 and 40, 2 grooms and 1 bride between 40 and 50, and 1 groom between 50 and 60.

In **GREENWOOD** county, the total number of marriages returned is 46, all of whom were white, and of American nationality. Of the number, 13 brides were under 20 years of age, 14 grooms and 19 brides between 20 and 25, 14 grooms and 5 brides between 25 and 30, 11 grooms and 5 brides between 30 and 40, 2 grooms and 3 brides between 40 and 50, 2 grooms between 50 and 60, and 1 groom between 60 and 70.

In **HARVEY** county, the total number of marriages returned is 152, 146 of whom were white, and 6 colored. Of this number, 103 grooms and 102 brides were of American nationality, while 48 grooms and 43 brides were of foreign nationality; 3 grooms and 54 brides were under 20 years of age, 55 grooms and 59 brides were between 20 and 25, 46 grooms and 19 brides between 25 and 30, 32 grooms and 14 brides between 30 and 40, 11 grooms and 3 brides between 40 and 50, and 3 grooms and 2 brides between 50 and 60.

In HODGEMAN county, the total number of marriages returned is 30.

In JOHNSON county, the total number of marriages returned is 141. Of this number, 5 grooms and 60 brides were under 20 years of age, 64 grooms and 54 brides between 20 and 25, 38 grooms and 11 brides between 25 and 30, 23 grooms and 12 brides between 30 and 40, 4 grooms and 3 brides between 40 and 50, 6 grooms between 50 and 60, and 1 groom and 1 bride between 60 and 70.

In KINGMAN county, the total number of marriages returned is 98, all of whom were white. Of this number, 91 grooms and 97 brides were of American nationality, while 7 grooms and 1 bride were of foreign nationality; 2 grooms and 32 brides were under 20 years of age, 31 grooms and 45 brides were between 20 and 25, 37 grooms and 12 brides between 25 and 30, 21 grooms and 8 brides between 30 and 40, 6 grooms and 1 bride between 40 and 50, and 1 groom between 50 and 60.

In LABETTE county, the total number of marriages returned is 180, of whom 163 were white, and 14 colored. Of this number, 166 grooms and 170 brides were of American nationality, while 14 grooms and 9 brides were of foreign nationality; 2 grooms and 50 brides were under 20 years of age, 52 grooms and 78 brides were between 20 and 25, 62 grooms and 21 brides between 25 and 30, 38 grooms and 16 brides between 30 and 40, 10 grooms and 8 brides between 40 and 50, 6 grooms and 4 brides between 50 and 60, and 9 grooms and 2 brides between 60 and 70.

In LINCOLN county, the total number of marriages returned is 44, of whom 41 were white, and 1 colored; 35 grooms and 39 brides were of American nationality, while 6 grooms and 2 brides were of foreign nationality; 25 brides were under 20 years of age, 13 grooms and 17 brides between 20 and 25, 20 grooms and 1 bride between 25 and 30, 10 grooms and 1 bride between 30 and 40, 1 groom between 40 and 50, and 1 groom between 50 and 60.

In LINN county, the total number of marriages returned is 141, of whom 133 were white, and 6 colored. Of the number, 137 grooms and 137 brides were of American nationality, while 2 grooms were of foreign nationality, and the nationality of 2 grooms and 4 brides not reported; 1 groom and 54 brides were under 20 years of age, 52 grooms and 48 brides between 20 and 25, 40 grooms and 18 brides between 25 and 30, 26 grooms and 10 brides between 30 and 40, 12 grooms and 7 brides between 40 and 50, 3 grooms and 3 brides between 50 and 60, 6 grooms and 1 bride between 60 and 70, and 1 groom between 70 and 80.

In MARION county, the total number of marriages returned is 73, all of whom were white. Of the number, 35 grooms and 20 brides were of American nationality, while 20 grooms and 24 brides were of foreign nationality; 18 brides were under 20 years of age, 22 grooms and 26 brides between 20 and 25, 18 grooms and 9 brides between 25 and 30, 10 grooms and 1 bride between 30 and 40, 3 grooms and 1 bride between 40 and 50, and two grooms between 50 and 60.

In MARSHALL county, the total number of marriages returned is 56, 54 of whom were white, 2 colored. Of the number, 45 grooms and 45 brides were of American nationality, while 9 grooms and 9 brides were of foreign nationality; 3 grooms and 20 brides were under 20 years of age, 19 grooms and 23 brides between 20 and 25, 22 grooms and 6 brides between 25 and 30, 9 grooms and 2 brides between 30 and 40, 1 groom between 60 and 70, and 1 bride between 70 and 80.

In McPHERSON county, the total number of marriages returned is 118. Of the number, 75 grooms and 75 brides were of American nationality, while 43 grooms and 43 brides were of foreign nationality; 2 grooms and 33 brides were under 20 years of age, 30 grooms and 50 brides between 20 and 25, 52 grooms and 20 brides between 25 and 30, 18 grooms and 7 brides between 30 and 40, 9 grooms and 2 brides between 40 and 50, 4 grooms and 4 brides between 50 and 60, and 1 groom between 60 and 70.

In MIAMI county, the total number of marriages returned is 173. Of these, 163 were white, and 8 colored; 156 grooms and 160 brides were of American nationality, while 16 grooms and 10 brides were of foreign nationality; 1 groom and 58 brides were under 20 years of age, 60 grooms and 76 brides between 20 and 25, 58 grooms and 24 brides between 25 and 30, 32 grooms and 7 brides between 30 and 40, 8 grooms and 3 brides between 40 and 50, 6 grooms and 4 brides between 50 and 60, 6 grooms between 60 and 70, and 1 groom between 70 and 80.

In MONTGOMERY county, the total number of marriages returned is 217, of whom 203 were white, and 11 colored. Of the number, 183 grooms and 186 brides were of American nationality, while 24 grooms and 23 brides were of foreign nationality; 2 grooms and 73 brides were under 20 years of age, 69 grooms and 94 brides between 20 and 25, 82 grooms and 21 brides between 25 and 30, 41 grooms and 14 brides between 30 and 40, 14 grooms and 11 brides between 40 and 50, 7 grooms and 4 brides between 50 and 60, 3 grooms between 60 and 70, and 1 groom between 70 and 80.

In NEMAH county, the total number of marriages returned is 13, all of whom were white, and of American nationality; 4 brides were under 20 years of age, 2 grooms and 9 brides between 20 and 25, 8 grooms between 25 and 30, and 3 grooms between 30 and 40.

In NORTON county, the total number of marriages returned is 23, all of whom were white. Of the number, 19 grooms and 20 brides were of American nationality, while 2 grooms and 1 bride were of foreign nationality; 14 brides were under 20 years of age, 10 grooms and 4 brides between 20 and 25, 7 grooms and 2 brides between 25 and 30, 3 grooms and 1 bride between 30 and 40, 1 bride between 40 and 50, 1 groom between 50 and 60, 1 groom and 1 bride between 60 and 70, and 1 groom between 70 and 80.

In OSBORNE county, the total number of marriages returned is 88, 87 of whom were white and 1 colored. Of the number, 74 grooms and 72 brides were of American nationality, while 13 grooms and 10 brides were of foreign nationality; 1 groom and 34 brides were under 20 years of age, 30 grooms and 35 brides between 20 and 25, 32 grooms and 12 brides between 25 and 30, 14 grooms and 4 brides between 30 and 40, 5 grooms and 2 brides between 40 and 50, 2 grooms between 50 and 60, and 2 grooms and 1 bride between 60 and 70.

In PHILLIPS county, the total number of marriages returned is 118, of whom 116 were white, and 2 colored. Of the number, 106 grooms and 107 brides were of American nationality, while 12 grooms and 11 brides were of foreign nationality; 46 brides were under 20 years of age, 41 grooms and 43 brides between 20 and 25, 44 grooms and 17 brides between 25 and 30, 21 grooms and 7 brides between 30 and 40, 7 grooms and 1 bride between 40 and 50, 3 grooms and 2 brides between 50 and 60, 1 groom and 2 brides between 60 and 70, and 1 groom between 70 and 80.

IN POTTAWATOMIE county, the total number of marriages returned is 121, all of whom were white. Of this number, 92 grooms and 102 brides were of American nationality, while 27 grooms and 18 brides were of foreign nationality; 1 groom and 44 brides were under 20 years of age, 41 grooms and 49 brides between 20 and 25, 43 grooms and 13 brides between 25 and 30, 24 grooms and 12 brides between 30 and 40, 8 grooms and 2 brides between 40 and 50, and 2 grooms between 50 and 60.

IN PRATT county, the total number of marriages returned is 53, of whom 52 were white, and 1 colored. Of this number, 47 grooms and 51 brides were of American nationality, while 5 grooms and 4 brides were of foreign nationality; 23 brides were under 20 years of age, 22 grooms and 10 brides were between 20 and 25, 12 grooms and 8 brides between 25 and 30, 6 grooms and 8 brides between 30 and 40, 9 grooms and 1 bride between 40 and 50, 3 grooms and 1 bride between 50 and 60, and 1 groom between 60 and 70.

IN RAWLINS county, the total number of marriages returned is 41, all of whom were white. Of this number, 28 grooms and 31 brides were of American nationality while 13 grooms and 10 brides were of foreign nationality; 1 groom and 17 brides were under 20 years of age, 9 grooms and 15 brides between 20 and 25, 20 grooms and 7 brides between 25 and 30, 11 grooms and 1 bride between 30 and 40, and 1 bride between 40 and 50.

IN SALINE county, the total number of marriages returned is 150, of whom 146 were white, and 4 colored. Of this number, 93 grooms and 107 brides were of American nationality, while 37 grooms and 39 brides were of foreign nationality; 1 groom and 34 brides were under 20 years of age, 46 grooms and 69 brides between 20 and 25, 58 grooms and 30 brides between 25 and 30, 26 grooms and 14 brides between 30 and 40, 12 grooms and 2 brides between 40 and 50, and 4 grooms between 50 and 60.

IN SEDGWICK county, the total number of marriages returned is 521, of whom 461 were white, and 60 colored. Of this number, 448 grooms and 475 brides were of American nationality, while 61 grooms and 41 brides were of foreign nationality; 11 grooms and 186 brides were under 20 years of age, 189 grooms and 203 brides between 20 and 25, 170 grooms and 57 brides between 25 and 30, 104 grooms and 44 brides between 30 and 40, 26 grooms and 16 brides between 40 and 50, 8 grooms and 3 brides between 50 and 60, 5 grooms and 3 brides between 60 and 70, and 1 groom between 70 and 80.

IN SHERIDAN county, the total number of marriages returned is 26, all of whom were white. Of this number, 18 grooms and 20 brides were of American nationality, while 3 grooms and 1 bride were of foreign nationality; 1 groom and 7 brides were under 20 years of age, 6 grooms and 9 brides between 20 and 25, 8 grooms and 6 brides between 25 and 30, 7 grooms and 3 brides between 30 and 40, 3 grooms between 40 and 50, and 1 groom between 60 and 70.

IN SHERMAN county, the total number of marriages returned is 44, all of whom were white. Of this number, 33 grooms and 38 brides were of American nationality, while 11 grooms and 6 brides were of foreign nationality; 20 brides were under 20 years of age, 13 grooms and 10 brides between 20 and 25, 19 grooms and 8 brides between 25 and 30, 9 grooms and 4 brides between 30 and 40, 1 groom and 2 brides between 40 and 50, and 2 grooms between 60 and 70.

In THOMAS county, the total number of marriages returned is 49, all of whom were white. Of this number, 41 grooms and 47 brides were of American nationality, while 7 grooms and 2 brides were of foreign nationality; 2 grooms and 27 brides were under 20 years of age, 13 grooms and 10 brides between 20 and 25, 17 grooms and 6 brides between 25 and 30, 11 grooms and 5 brides between 30 and 40, 4 grooms between 40 and 50, 1 bride between 50 and 60, and 1 groom between 60 and 70.

In WICHITA county, the total number of marriages returned is 35, all of whom were white. Of this number, 32 grooms and 32 brides were of American nationality, while 3 grooms and 3 brides were of foreign nationality; 7 brides were under 20 years of age, 11 grooms and 11 brides between 20 and 25, 9 grooms and 8 brides between 25 and 30, 9 grooms and 5 brides between 30 and 40, 3 grooms between 40 and 50, 1 bride between 50 and 60, 2 grooms and 1 bride between 60 and 70, and 1 groom between 70 and 80.

In WILSON county, the total number of marriages returned is 133, all of whom were white. Of this number, 130 grooms and 130 brides were of American nationality, while 3 grooms and 3 brides were of foreign nationality; 1 groom and 50 brides were under 20 years of age, 57 grooms and 62 brides between 20 and 25, 38 grooms and 16 brides between 25 and 30, 30 grooms and 4 brides between 30 and 40, 6 grooms between 40 and 50, and 1 groom and 1 bride between 50 and 60.

In WOODSON county, the total number of marriages returned is 99, of whom 98 were white, and the color of 1 not stated. Of this number, 84 grooms and 89 brides were of American nationality, while 12 grooms and 8 brides were of foreign nationality; 1 groom and 39 brides were under 20 years of age, 37 grooms and 40 brides between 20 and 25, 34 grooms and 11 brides between 25 and 30, 17 grooms and 5 brides between 30 and 40, 8 grooms and 2 brides between 40 and 50, and 2 grooms and 1 bride between 50 and 60.

The following death certificate of a colored man in Leavenworth may be of special interest:

His name was ——— Smith; he died in the city of Leavenworth, in September, 1888; he died of heart trouble, which had been of long standing. He was born in Africa; had lived in Kansas 22 years, and was *one hundred and ten* (110) *years old* at the time of his death.

This death was reported by J. F. McGill, M. D., of Leavenworth.

The table on the following page is a list of counties and number of deaths in each, resulting from the following eight diseases that are very dangerous to public health, and were reported to the Secretary of the State Board of Health, by the county health officers, for the year 1887.

Counties.	Small-pox.....	Measles.....	Whooping-cough..	Scarlatina.....	Diphtheria.....	Dysentery.....	Typhoid fever.....	Pernicious malarial fever.....	Cerebro-spinal fever.....	Cholera infantum..
Atchison.....										5
Brown.....		2			2		2		2	7
Butler.....		2		2						2
Chase.....		1					4			3
Clay.....			1		1					1
Cloud.....							1		2	1
Colley.....							4		1	1
Crawford.....		13	2	5			9		5	15
Davis.....					2					8
Decatur.....				1	1		1			3
Elk.....		3		1			7		1	1
Ellsworth.....		1			10					6
Ford.....					1		9		3	10
Greenwood.....					2					3
Hamilton.....										6
Harvey.....							6		2	7
Hodgeman.....					10		2			1
Jewell.....					5		6			5
Johnson.....		1	2	3	4		3		1	4
Kingman.....		4			6		8		1	7
Labette.....		7	2		1		3		6	11
Lincoln.....		4	1		7		3			9
Linn.....							6			3
Lyon.....					2		5		1	3
Marshall.....			2		13		4			8
Miami.....		2			1		4		3	2
Mitchell.....		1			6		1		4	2
Morris.....		2			1		1		2	2
Nemaha.....			1		10		12			5
Norton.....		1					1		1	5
Osage.....		4		2	4		10			4
Phillips.....		1			2		6		4	5
Pottawatomie.....			3		5				1	
Rawlins.....										6
Rooks.....		4	2		8		4		1	6
Russell.....		2	2		7		3		4	11
Shawnee.....		4		1	3		3		4	14
Sherman.....							1			1
Thomas.....			1		8		2			3
Wabaunsee.....			1		8		2			3
Wichita.....										
Wilson.....		3					5		5	14
Woodson.....		1					4		1	3
Totals.....		64	22	15	144		147		55	205

Below is the tabulated statement of deaths, reported from the same counties, for the year 1887, by months, from the four following diseases very dangerous to public health, viz.: Measles, scarlet fever, diphtheria, and typhoid fever.

MEASLES.

Counties.	January.....	February.....	March.....	April.....	May.....	June.....	July.....	August.....	September.....	October.....	November.....	December.....
Brown.....			1			1						
Butler.....				1	1	1						
Chase.....				1								
Crawford.....		4	3	1	3	1			1		1	
Elk.....				2								
Ellsworth.....					1							
Jewell.....												
Johnson.....		1					1					
Kingman.....			4									
Labette.....		1	4	2								
Lincoln.....		3	1									
Miami.....					1			1				

MEASLES—CONCLUDED.

Counties.	January.....	February ..	March.....	April.....	May.....	June.....	July.....	August.....	September ..	October	November ..	December ..
Mitchell.....					1							
Morris.....					1	1						
Norton.....						1						
Osage.....			3	1								
Phillips.....					1							
Rooks.....				1	2		1					
Russell.....				1	1		1					
Shawnee.....			1	2				1				
Wilson.....			1	1	1							
Woodson.....			1									
Totals		9	19	13	12	5	3	2	1		1	

SCARLET FEVER.

Counties.	January.....	February ..	March.....	April.....	May.....	June.....	July.....	August.....	September ..	October	November ..	December ..
Butler.....		1						1				
Crawford.....	1	2	1				1	1				
Decatur.....							1					
Elk.....							1				2	
Johnson.....					2							
Osage.....							1					
Shawnee.....												
Totals	1	3	1		2		4	2			2	

DIPHtheria.

Counties.	January.....	February ..	March.....	April.....	May.....	June.....	July.....	August.....	September ..	October	November ..	December ..
Brown.....			2									
Davis.....			1				1					
Decatur.....								1				
Ellsworth.....									1		1	
Ford.....	1			3	1				1	4		
Greenwood.....	1						1					
Harvey.....		1						2	2	3		2
Hodgeman.....				1	2						1	
Jewell.....								1	1	1		1
Johnson.....		1	1					1	1	1	1	
Kingman.....	2					1				1	2	
Labette.....												1
Lincoln.....	1	3		1				1	1	2		
Lyon.....		1										
Marshall.....		4	4	2						2		1
Miami.....			1									
Mitchell.....	4	1	1								1	
Morris.....						1						
Nemaha.....								1	2	5	2	
Osage.....	1								3			1
Phillips.....	1											1
Pottawatomie.....	3									2		
Rooks.....							4			1	2	1
Russell.....		1	1						5	1		
Shawnee.....	1											2
Wabaunsee.....	1	1	1						1	2	2	
Totals.....	15	13	11	7	3	2	6	5	13	29	12	10

TYPHOID FEVER.

Counties.	January.....	February..	March.....	April.....	May.....	June.....	July.....	August.....	September..	October.....	November...	December..
Brown.....			1							1		
Chase.....						1	1				1	1
Cloud.....						1			1	1	1	
Coffey.....								1	1			
Crawford...				1		1		2	2	3		
Decatur.....										1		
Elk.....		1	1				1	1	1	2		
Ellsworth...						1	3	2	1		3	
Ford.....									4	4	1	
Harvey.....		1								1	1	3
Hodgeman...										1	1	
Jewell.....							1	1	3		2	1
Johnson...			1				2	3	1			
Kingman...			1				4	1	1		1	1
Labette.....	1							2			3	2
Lincoln.....							2			1		
Linn.....								1	2		3	
Marshall...						1		1	1	1		
Miami.....	1	1			1		1					
Mitchell...									1			
Nemaha.....	2	1					1			3	3	2
Norton.....									1			
Osage.....						1	1	2		3		3
Phillips...							1	1		2	2	
Rooks.....								1	3			
Russell.....			1								1	
Shawnee...						1				2		
Sherman...										1		
Thomas.....										1		
Wabauusee...												
Wilson.....	1							1	1	1		2
Woodson...								1	1		1	1
Totals.....	5	4	5	1	1	7	16	19	26	31	23	16

Below is a comparative statement, which will be of interest to anyone who will examine it, of a list of counties, and number of deaths in each, resulting from the ten diseases that are very dangerous to public health, and were reported to the Secretary of the State Board of Health by the county health officers, for the year 1888:

Counties.	Small-pox.....	Measles.....	Whooping-cough..	Scarlatina.....	Diphtheria.....	Dysentery.....	Typhoid fever....	Periculous malarial fever.....	Cerebro-spinal fever.....	Cholera infantum..
Atchison.....			17	2	39	2	7	11		17
Anderson...							1			1
Clay.....	1	1	1	1	1	1	1	1	1	1
Cloud.....			1			1		1		
Comanche...							2			
Crawford...		5	6	7	5		13		6	22
Davis.....	1			8		6				12
Decatur.....				1		1	3		1	2
Doniphan...							4		1	2
Elk.....							3		2	
Ellis.....										1
Ellsworth...		1				2	2		1	5
Finney.....					2	3				1
Ford.....			2	1	1	1	3		2	14
Franklin...					5			3		
Graham...						7	12			5
Gray.....						1				1
Greenwood..			1			3				12

COMPATIVE STATEMENT OF DEATHS—CONCLUDED.

Counties.	Small-pox.....	Measles.....	Whooping-cough..	Scarlatina.....	Diphtheria.....	Dysentery.....	Typhoid fever.....	Pernicious malarial fever.....	Cerebro-spinal fever.....	Cholera infantum.....
Harvey.....	1				1	1	6			2
Hodgeman.....							2			1
Jefferson.....					7					2
Jewell.....			6	1	7	3	11		1	15
Johnson.....			1	1	1	1	10		1	5
Kiowa.....							1			2
Kingman.....					1	1	4			4
Labette.....			4	2	4		10		7	4
Lane.....									1	2
Leavenworth.....				2		1	2			4
Lincoln.....			1				3		2	4
Linn.....			1	2	1	6	7	2	2	3
Lyon.....				10	1	1				2
Marion.....			2		4	1	1		2	3
Marshall.....			5		4	2	2		8	8
McPherson.....	7		1	1	11				3	1
Miami.....			2	5	3		2		1	4
Montgomery.....					2	1	7			15
Nemaha.....		1			3	4	5	2	1	2
Neosho.....							1			3
Norton.....			1					1		
Osage.....					4		3		1	2
Osborne.....		1	4		3	4	5		2	6
Pawnee.....					2	3	2	1		5
Phillips.....		10		7	5	1	7			7
Pottawatomie.....			1		3				1	5
Pratt.....	1					1	4			2
Rawlins.....						1	1	5		
Russell.....				1	4	1	1		1	1
Saline.....							4			3
Sedgwick.....	10			1			4			4
Shawnee.....			1	1	2	2	5	1	3	12
Sheridan.....			1				5		1	7
Sherman.....				1		1			2	2
Thomas.....					1	3	3		2	10
Wabaunsee.....		1	2		9	3	6	3		11
Washington.....		1			2					1
Wichita.....							1			3
Wilson.....		1	2	2	1	5	7		3	7
Woodson.....							3			9
Totals.....	20	23	63	57	138	76	188	30	57	275

Below is the tabulated statement of deaths reported from the same counties for the year 1888, by months, from the four following diseases very dangerous to public health, viz.: Measles, scarlet fever, diphtheria, and typhoid fever:

MEASLES.

Counties.	January.....	February.....	March.....	April.....	May.....	June.....	July.....	August.....	September.....	October.....	November.....	December.....
Clay.....												1
Crawford.....					2		3					
Davis.....									1			
Ellsworth.....							1					
Nemaha.....				1								
Osborne.....								1				
Phillips.....			1	2	4	2		1				
Wabaunsee.....		1										
Washington.....					1							
Wilson.....		1										
Totals.....		1	2	3	7	2	4	2	1			1

SCARLET FEVER.

<i>Counties.</i>	<i>January....</i>	<i>February...</i>	<i>March.....</i>	<i>April.....</i>	<i>May.....</i>	<i>June.....</i>	<i>July.....</i>	<i>August.....</i>	<i>September..</i>	<i>October.....</i>	<i>November..</i>	<i>December..</i>
Atchison.....			1									1
Clay.....												1
Crawford.....	1	3	1	2								
Davis.....			1	3	2	1		1				
Decatur.....					1							
Ford.....			1									
Jewell.....										1		
Johnson.....			1									
Labette.....					1			1				
Leavenworth.....								1				
Linn.....			1	1						1		
Lyon.....			3	3					3	1		
McPherson.....			1									
Miami.....	1		1		1	1				1		
Phillips.....				3	1	2		1				
Russell.....							1					
Sedgwick.....						1						
Shawnee.....		1										
Sherman.....											1	
Wilson.....	1		1									
Totals.....	3	4	12	12	6	5	1	3	4	4	1	2

DIPHTHERIA.

<i>Counties.</i>	<i>January....</i>	<i>February...</i>	<i>March.....</i>	<i>April.....</i>	<i>May.....</i>	<i>June.....</i>	<i>July.....</i>	<i>August.....</i>	<i>September..</i>	<i>October.....</i>	<i>November..</i>	<i>December..</i>
Atchison.....	2			2	14	7	2	2	5	5		
Clay.....										1	3	1
Crawford.....									2			
Ellsworth.....			1			1	1				1	2
Finney.....										1		
Ford.....									1	1		
Franklin.....											1	
Harvey.....								1	4	1	2	1
Jefferson.....	3	1										
Jewell.....										1		
Johnson.....												1
Kiugman.....										1		2
Labette.....		1								1		
Linn.....										1		
Lyon.....										1		
Marshall.....	2					1				1		
McPherson.....	5	1		1					2	1	1	
Miami.....			3									
Montgomery.....										1	1	
Nemaha.....			1						1		1	
Osage.....				1		3		1				
Osborne.....		1					1	1				
Pawnee.....		1	1									
Phillips.....		1		1	2	1						
Pottawatomie.....	1				1						1	3
Russell.....				1								
Shawnee.....			1	1								
Thomas.....											1	
Wabauunsee.....	3		2								3	1
Washington.....				1		1						
Wilson.....											1	
Totals.....	16	6	9	8	17	14	5	3	16	15	17	12

TYPHOID FEVER.

Counties.	January...	February...	March.....	April.....	May.....	June.....	July.....	August	September ..	October	November..	December...
Atchison	1	1						1		1	2	2
Anderson												1
Clay.....												
Comanche.....	2											
Crawford.....		1	1	2			2	4			1	
Decatur.....							1	1				
Deniſhan.....							1	2	1			
Elk.....					1			1				1
Ellsworth								1	1			
Ford.....							2					1
Graham								1	3	4		4
Harvey.....				1			1	2				1
Hodgeman.....								1	1	1		1
Jewell.....				2				4	2			3
Johnson.....	2	2		1				4		1		
Kiowa.....							1					
Kingman.....									1	1	1	1
Labette.....						1		1	3	4	1	
Laue.....						1						1
Leavenworth.....											1	1
Lincoln					1			1	1			
Linn.....			1	1				1		1	2	1
Marion.....	1											
Marshall.....	1	1										
Montgomery.....							1	3	1	1	1	
Miami.....									2			
Nemaha.....								2	2	1		
Neosho.....										1		
Osage.....			1				1				1	
Osborne.....				1						2		1
Pawnee								1	1	1		
Phillips.....						1	3	1	2			
Pratt.....			1	1		1		1	1		1	
Rawlins.....			1									
Russell.....	1								1			
Saline.....	1		1					1	1			
Sedgwick.....							1	1	2			
Shawnee.....			1				2				2	
Sheridan.....								2	1			
Thomas.....										2		
Wabauſſee.....								1	2	2	1	
Wichita.....									1			
Wilson	1		1				1	1		2		1
Woodſon.....	1					1					1	
Totals.....	11	5	7	7	4	6	12	28	41	8	17	20

STATE BOARD OF HEALTH.

BY J. W. REDDEN, M. D., SECRETARY.

Facts and Figures Concerning One of the Most Important State Organizations—Information for Legislators and Others.

The following paper will be of interest to anyone who will carefully examine the statements and facts contained therein.

At the request of members of the Legislature and others interested in the subject of health matters, I have concluded to present the following statement, facts and figures for their information :

The Kansas State Board of Health was organized April 10, 1885. For the fiscal year ending June 30, 1885, there was appropriated the sum of \$950. Of this was expended for furniture and other permanent items, \$195; salary, traveling and other necessary expenses, \$635.30; cash balance in State treasury, \$123.70. For the fiscal year from June 30, 1885, to June 30, 1886, amount appropriated, \$4,500. Amount expended for permanent articles still on hand, \$540.70; traveling and other necessary expenses and Secretary's salary, \$2,873.23; cash balance in State treasury, \$1,102.07. For fiscal year, June 30, 1886, to June 30, 1887, amount appropriated, \$4,500. Amount expended for permanent articles still on hand, \$276.15; traveling and other necessary expenses, and Secretary's salary, \$3,022.91; cash balance in State treasury, \$1,200.94. For fiscal year, June 30, 1887, to June 30, 1888, amount appropriated, \$4,500. Amount expended for traveling and other necessary expenses, and Secretary's salary, \$3,951.61; cash balance in State treasury, \$548.39. For the fiscal year ending June 30, 1889, amount appropriated, \$4,500. Amount expended to January, 1889, \$1,763.93; cash balance in State treasury, \$2,736.07; making the total appropriation from April 10, 1885, to June 30, 1889, \$18,950. Of this amount there has been expended \$12,225.98; invested in permanent items, \$1,011.85, leaving in the State treasury \$5,712.17.

The number of counties having received assistance from the Board is as follows: Number of counties, 2, in preventing sale of diseased meats and decaying vegetables; number of counties, 20, in small-pox; number of counties, 56, in diphtheria; number of counties, 40, in scarlet fever; number of counties, 78, in typhoid fever; number of counties, 24, in epidemic dysentery. Means were promptly taken by the Board in these several instances to stamp out or curtail the spread of these epidemics, and with success.

The Board of Health has conducted its affairs with zeal and economy, keeping, in the performance of its trust and the expenditure of the monies appropriated for its use, strictly within the letter and spirit of the law. The work appointed for it is not only great and beneficent, but of vast utility and necessity to the health and physical well-being of the people of the State. In the sanitary measures it has set in motion, the study and reports on the causes and prevention of disease—of epidemics and scourges of a kindred character which, in years gone by, have been the dread and terror of nations—too great a stress cannot be placed nor too earnest a support given by the executive and legislative branches of the government.

Appropriations were made last year for the following State boards of Health:

Connecticut	\$5,000
Iowa	5,000
Indiana	5,000
Maine	5,000
Wisconsin	5,000
Michigan	6,000
Missouri	6,000
California	10,000
Pennsylvania	10,000
Illinois	49,000
Texas	60,000
Massachusetts	100,000

All the States of the Union have active health organizations, except the following five: Florida, Nebraska, Nevada, Oregon, and Virginia.

All of these five States are making efforts, with assurance of success, to secure laws to create State boards of health, which no doubt will be done in the near future. If there had been a State board of health in Florida during the past two years, with adequate funds at its disposal, the recent epidemic of yellow fever would have been readily controlled and stamped out, if not even prevented, and thus saved to the State a general panic, depression of business, depreciation of property, millions of dollars, and very many valuable lives.

The following official information has been received: That the Governor of Florida has called an extra session of the Legislature, which will cost the State at least \$50,000, for the purpose of establishing a State Board of Health.

Of the thirty-three existing State boards of health, no law creating either of them has ever been repealed. Shall Kansas be the first to take this retrograde movement and throw the State back twenty years in sanitary progress? The people do not demand it, and our law-making representatives cannot afford to ignore the wishes and interests of their constituents. Give the State Board more power and authority, which they ask for, to regulate and control contagious and pestilential diseases and all nuisances which endan-

ger the health of the people, and greater results and more benefit will be accomplished for the health, comfort and prosperity of the people.

An important factor in sanitary progress is the increase in the number of persons who enter, more or less permanently, upon some branch of sanitary work. In many of our States such increase is very great. For instance, in Michigan, when the State Board of Health was organized, in 1873, there was hardly an active local board of health in the State; very few local health officers were appointed, while for the year 1887-8 over 1,300 local health officers were appointed in the State, and many of them physicians, who devote considerable time to the work. Similar results have been accomplished in Kansas through the labors of the State Board of Health.

But the most important factor tending to increase the demand for sanitary literature is the work of the boards of health themselves, and especially that part of their work which consists in spreading among the people, in popular pamphlet form, the existing knowledge applicable to the restriction and prevention of the most dangerous diseases, including the relations of low-ground water and of contaminated water to typhoid fever, and similar information of immediate practical utility. This work is productive of immediate good in the reduction of the sickness and mortality from such dangerous diseases, and it stimulates a general desire among the people for more knowledge on such vital subjects.

The last Legislature of Massachusetts made an appropriation of \$30,000 for the use of the State Board of Health in protecting the "purity of inland waters." It was thought wise to begin with the largest and most important supplies. . . . "From time to time other water supplies have been examined in this exhaustive manner." . . . "Four rivers in the State have been systematically examined." The results of these examinations are given in the report of that State Board, made January, 1888. The Board has established an experiment station to determine the amount of sewage that can, in that climate, be purified by application to different soils.

Since January 1, 1888, small-pox has been reported in twenty-one States of the Union. Small-pox is now reported in ten States, as follows: California, Connecticut, Colorado, Illinois, Kentucky, New York, Minnesota, Pennsylvania, Wisconsin, and Kansas. Although small-pox is still (or was recently) present in ten States, it is not spreading, and it speaks highly for the utility of the public health service generally throughout this country, that although introduced into twenty-one States of the Union, small-pox has not been allowed to spread to any great extent, except in California, where its restriction, on account of the Chinese, was especially difficult.

There are one hundred and six counties in Kansas, and nearly ninety of these have active, efficient, and valuable county health organizations, and perform work of inestimable value to the people. About ten other counties have a passive health organization, who work irregularly and spasmodically, while the remaining few, mostly new counties and sparsely settled, are not by any means indifferent or careless in sanitary efforts.

Many chemical analyses and microscopical examinations have been made by the chemist of the State Board of Health of various samples of suspected drinking-water, sent from different counties of the State; the result, in most instances, proving that the suspicions of the county health officers were well founded, and by their timely action and scientific investigations have checked disease, suppressed epidemics, avoided suffering, prevented deaths, and sent blessings and comfort to many firesides.

The executive committee of the Board have visited all the State charitable institutions, made thorough and careful examinations, presented important suggestions, and set in motion valuable changes in sanitary matters, as their several interesting and able reports will clearly show.

People are beginning to understand these facts, and there never has been a time in the history of the world when physicians, sanitarians, and the people generally, were required to study these questions as they are to-day; when as much was demanded of legislators; when such measures were being taken, and so much money being voted by the legislatures of the world to promote public health as at the present time.

In many of the western counties people have been negligent and culpable in carelessly leaving hundreds of dead animals, some even dying from contagious diseases, exposed to the heat of the sun, and their sickening and deadly emanations to be wafted by the strong winds to the hearthstones of many happy and unsuspecting homes. Many of these diseased carcasses have even been thrown into the running, sparkling streams, from which stock drink, and families derive their water both for drinking and culinary purposes. Fortunately, the county health officers, under the directions of the State Board of Health, have taken prompt and timely measures and abated or destroyed such nuisances—thus preventing untold suffering and innumerable deaths, which would otherwise have naturally resulted.

Committees of the State Board of Health have visited several localities where epidemics were threatened, and in coöperation with the county health officer have promptly enforced such sanitary measures as prevented the spread of epidemics of contagious and fatal types.

By the timely and efficient action of the State Board of Health, aided by the county and city health officers, the cities of Topeka, Atchison, Paola, Centralia, Emporia, Holton, and Marion, and the counties of Shawnee, Atchison, Miami, Nemaha, Lyon, Jackson, Phillips, and others, have been delivered from the dreaded and life-destroying epidemics of small-pox, scarlet fever, and diphtheria, and thus thousands of dollars saved to said communities and hundreds of useful lives. In some instances, to accomplish these results, public schools and Sabbath schools had to be closed, quarantine established, isolation enforced, public funerals and assemblies forbidden; but the end justified the means, and it is an unanswerable argument in favor of the value and usefulness of organized health boards.

Through the efforts and directions of the State Board of Health, the State

is now in a far better sanitary condition than ever before; and is thus the better fortified and prepared to resist the entrance of cholera within her borders, with which she is threatened the coming summer from the east and west, through the inter-state railroad travel and communications from each ocean shore; and through the prompt inter-state notifications by the secretaries of State boards of health, can more successfully control and suppress any sporadic cases, should they appear, before the disease assumes an epidemic form.

At the present time small-pox exists in four different counties. It was introduced late in December into Oberlin, Decatur county, by a young man contracting it in Denver, where he had been visiting. As soon as the nature of the disease was discovered, it was reported to the Secretary of the State Board of Health, and a member of the State Board was sent at once to Oberlin, and in conference with the health officer and attending physicians decided the nature of the disease. Quarantine and isolation were at once ordered and enforced; also, disinfection and vaccination in town and country. Before the case was reported several persons had been exposed, and some twenty cases have resulted; most of these have recovered, and the rest are well cared for with the prospect of a speedy recovery. There has been no death, nor has the disease spread any since the quarantine has been established. There is one case of small-pox at Marvin, Phillips county, and one case at Ludell, Rawlins county. Both of these contracted the disease at Oberlin. They were promptly reported to the Secretary of the State Board of Health, and have been quarantined, and all other measures have been promptly and effectually enforced, and the disease has been confined to the one case in each of these counties.

A young man came to Bushong, Lyon county, some ten days ago, and was taken down with small-pox, having contracted it in Kansas City. This case was promptly reported, and a similar course ordered and carried out as in the last two cases, and with like favorable results. Without the existence of State and county health boards such results could not and would not have been accomplished. Is any argument needed to convince even the skeptical of the necessity of the existence and perpetuation of the Kansas State Board of Health, or of its utility and importance?—even if it costs the State a few thousand dollars annually, which is judiciously expended in the interests of preventive medicine and public health.

TOPEKA, February 4, 1889.

PAPERS AND REPORTS

PRESENTED TO THE AMERICAN PUBLIC HEALTH ASSOCIATION.

The first two papers were read before the American Public Health Association at its sixteenth annual meeting, at Milwaukee, Wis., November, 1888:

PROBLEMS IN REGARD TO YELLOW FEVER AND THE PREVENTION OF YELLOW-FEVER EPIDEMICS.

BY JEROME COCHRAN, M.D., STATE HEALTH OFFICER OF ALABAMA.

In the practical application of sanitary science, the question of questions in all our Southern communities is that which concerns the management of yellow fever and the prevention of yellow-fever epidemics. The natural habitat of this disease is in the West India Islands, which are in constant communication with our gulf and Atlantic ports; and these again are in constant communication with all the cities and towns of our Southern States. The railroads, with locomotives running from twenty to forty miles an hour, have virtually abolished distances, and brought the whole interior of the country down to the shores of the sea.

Up to the present time yellow fever has never gained a permanent footing in any part of the United States—has never become naturalized among us; but we are now confronted with the danger that it may by possibility find an abiding domicile in the more southerly portions of Florida—that is to say, in that part of the State of Florida below the frost line. Last winter it hibernated as far north as Tampa and Plant City; but last winter was exceedingly mild in Florida, and furnishes the first instance of hibernation that has occurred in the epidemic history of the State. In Jacksonville the winters are always cold enough to eradicate yellow fever. If we have, this coming winter, an average amount of frost and cold in Florida, I am of the opinion that there is not likely to be any hibernation of the disease in any of the places where it has prevailed this summer, unless it may be in the small towns on the Manatee river; and even in these small towns the chances are even that it will die out for want of material. In a large majority of epidemics that have visited Key West, where frost was never known to show itself, the fever has disappeared in the month of August; and it has never been known to hibernate there.

Yellow fever is certainly infectious, and the specific poison that causes it—a poison as specific as atropia or hydrocyanic acid—can be transported from place to place in the ordinary vehicles of travel and traffic, in the bodies and baggage of men and women. This specific poison is undoubtedly connected in some way with the presence of some living organism, some bacterium, some microbe, some living disease-germ of some sort, and probably belongs to the class of chemical substances known as ptomaines. As yet neither the poisonous ptomaine, nor the living organism which generates it, has been demonstrated; and so there are many unsolved problems connected with the etiology of the disease. A few of these I will briefly indicate:

(1) Does the pathogenic organism multiply its generations within the human body, or outside of it? or does it find conditions favorable to its growth and multiplication, both in the body of the patient and in the patient's environment? Its

multiplication within the body of the patient has been denied, but I think not with sufficient reason. If the organism is not itself active within the body of the sick person, I know of no clue to the explanation of some of the facts connected with the propagation of epidemics. In the meantime its growth in the environment seems hardly to admit of question. Upon no other hypothesis can we explain the infection of localities.

(2) How does the specific cause of the disease find its way into the body of the patient? Is it absorbed through the skin? Hardly, I should think. Does it find its way through the pulmonary vehicles in the act of respiration? I know of no facts which favor this presumption. On the contrary, both the pulmonary vesicles and the expired air are singularly free from the presence of germs of any sort. Only one other avenue is left open for its introduction—the alimentary mucous membrane. In support of this doctrine, also, the paucity of facts is remarkable. In all the literature on the subject, so far as it is known to me, nothing is recorded to connect its introduction with the alimentary ingesta—with any sort of food or drink. Can it be that the germs first find lodgment, in the act of respiration, in the mucous membrane of the mouth and pharynx, to be subsequently swallowed along with what we eat and drink? It must get into the system in some of these ways, and it seems to me that the probabilities are most favorable to the one last mentioned. But in regard to this, let it be remembered that for the present all is pure speculation—mere guess-work, and nothing more.

(3) If the germ is generated within the body, how does it find its way out so as to become an agent for the infection of communities and localities? Is it thrown off with the exhalations of the skin? with the sweat? Or is it thrown off with the expired air in the act of breathing? Or is it eliminated through the kidneys? Or does it make its exit through the great sewer of the intestines in company with the alvine excretions? We have absolutely no facts to enable us to answer these questions, but it would seem to be the more probable supposition that it escapes from the body with the dejections from the alimentary canal; and, if this is the case, Parke was right years ago when he called yellow fever a fecal disease.

(4) In the production of the clinical phenomena of yellow fever, the poison permeates the entire system of the patient. It causes marked nervous disturbance. It leads to fatty degeneration of the liver and other organs and tissues. It attacks the blood corpuscles so as to cause them to part with their coloring materials. It develops acute desquamative nephritis, with albuminuria and urinary suppression, and the whole train of symptoms characteristic of what we ordinarily call uræmic poisoning. All these pathological phenomena may be ascribed, with great plausibility, to the action of the hypothetical ptomaine, which would readily find its way into the circulating blood, and so to all the tissues and organs of the body.

(5) Of the germ itself, as already stated, we know nothing in any positive or direct fashion. It has never been demonstrated. No man has ever seen it with his eyes, or touched it with his fingers. The *cryptococcus zantho genicus* of Friere, and the *peronospora lutea* of Carmona, are not real existences; and the germs of Finley and Gibier have not been shown to have anything to do in the production of yellow fever. It may be accepted as tolerably certain that in yellow fever no distinctive organisms are to be found in the blood or in the tissues. This seems to me to have been settled once for all by Sternberg's Havana researches in 1879. At any rate, all those at present engaged in this research have, by common consent, turned their attention to the flora of the alimentary canal. Theoretically, a microbe in the alimentary canal, generating a poisonous ptomaine, to be subsequently absorbed into the circulation, would account for all the phenomena of the disease.

Fortunately, it is not necessary that all these problems of ultimate pathology

should be solved in order that we may frame some rational scheme for the prevention of the spread of yellow fever. A few of the leading facts, derived from observation of the habits of the disease, and attending its dissemination in time and space, I proceed to mention very briefly:

(1) Yellow fever, as already stated, is infectious, and is propagated by the introduction into the human system of a specific poison, or of a specific organism which generates a specific poison, and which is transportable from place to place. In an immense majority of recorded epidemics, the outbreak of the disease is in traceable connection with the introduction into the stricken community of some person from a place already infected, who has the fever at the time of his coming or within a few days thereafter. In a much smaller number of instances, it is traceable to the introduction of baggage, clothing, or bedding, brought from some infected place, and which has been used about some one who had the fever. Other agents and vehicles of infection are so infrequently the causes of epidemics as not to require any special mention here.

(2) While the disease spreads from the patient, it is not perhaps at all, and certainly not to any considerable extent, contagious from person to person like small-pox. In its transmission, it is probably somewhat analogous to typhoid fever and cholera. It seems to take root in the locality—in the soil, as it were—and to be contracted from the environment of the patient rather than from the patient himself; and the locality remains infected after the patient has been removed—remains infected for weeks, and even months.

(3) But yellow fever does not always spread on the introduction of an exotic case. On the contrary, it is the rule in the large majority of instances, that one or two cases occurring in a community may fail to establish an epidemic. A thousand sparks may fall on the roof of a house, but perhaps only one of them kindles into flame and causes a conflagration. Doctors and nurses are frequently exposed for a long time before they take the fever; and very often they pass through an epidemic, and even through several epidemics, without contracting the fever. The great factor in the dissemination of the fever is human intercourse. It is known that scarlet fever and diphtheria can be carried from place to place by cats and dogs, and I know of no reason why the poison of yellow fever cannot be carried in the same way. Yellow fever is not disseminated ordinarily to any large extent by atmospheric currents. Ordinarily, it will not cross a street unless somebody carries it across. Ordinarily, it will not surmount a wall twenty feet high. It is usually not very dangerous to walk the streets of an infected city in the daytime. The danger is greater at night.

(4) The golden rule of prophylaxis in yellow fever is, non-intercourse—non-intercourse with infected places, non-intercourse with infected persons, and non-intercourse with infected things. If you keep away from the fire you won't get burned, and it is not necessary to keep very far away either. The instances are very numerous in which prisons, jails, and cloistered convents, in the very midst of epidemics, have escaped infection. The instances are also numerous in which, in the midst of epidemics, private residences have, in like manner, by the observance of strict isolation, escaped infection. These facts are of the utmost importance, and should be generally known and generally acted upon when yellow fever is on its travels.

(5) It seems reasonable to believe that, in infected places, all persons who are at all exposed must receive into their bodies some portion, larger or smaller, of the poisonous ptomaine which generates the disease, or some number, more or less, of the specific germs which generate the ptomaine. But all who are so exposed do not take the fever. In other words, the question of dose seems to be, in this case, as in

other cases, a consideration not to be overlooked. Some of those exposed suffer no ill consequences whatever; others suffer more or less malaise for longer or shorter times, but escape any decided attack of the fever; others have the fever in mild form, and readily recover; others still have it in every grade of increasing severity up to those malignant explosions that cause death in a few hours. It seems to me fair to conclude that these varying results are due to the interaction of two factors—differences in the quality of the poison received, and differences in the power of resistance to the influence of the poison possessed by the several classes of persons mentioned.

(6) As to differences of susceptibility, there can be no question about that. Whites are far more susceptible than blacks. Men are more susceptible than women. Adults are more susceptible than children. Besides these broad distinctions, there are others not so manifest, but I think equally certain. Among the whites, those with dark hair and skin, and with what is sometimes called the bilious temperament, are less susceptible than those with light hair and fair skin and the sanguine temperament; and the same individual is more susceptible at some times than at other times.

(7) For the purposes of the sanitarian, the length of the period of incubation is a consideration of importance, as upon this depends the rational period of detention of persons in quarantine. Our information in regard to this question is not so precise as we could wish it to be. It is commonly assumed that the solution of this question depends on the ascertained facts in cases where yellow fever occurs after a single exposure. In such cases as these, so far as I have been able to find out, the period of incubation is frequently only one or two days, and is rarely more than five days. Refugees who have yellow fever at all usually have it within five days after leaving the infected locality; but I am not at all sure that the same rule always obtains in the infected locality. Here doubtless the poison is passing into the system from day to day, and at the same time passing out of the system from day to day. If the elimination of the poison keeps pace with the introduction of it, the man does not have yellow fever at all; but if the process of elimination is defective, the poison accumulates until at last the resistance is overcome, and the febrile explosion follows.

(8) I cannot dwell on the question of diagnosis, although it is practically one of the utmost importance. If the case is severe, with yellow discoloration, suppression of urine, black vomit, and death, no physician of reasonable knowledge ought to have any difficulty in saying that it is yellow fever. But suppose the case is a mild one, without discoloration, without suppression, without black vomit, without a fatal termination: how is the diagnosis to be made then? Even in such cases the expert finds but little difficulty. He recognizes his old acquaintance under all sorts of disguises. There is the three days of the initial fever, continued or *quasi* continued. There is the want of parallelism between the pulse and the temperature, which is usually observable to some extent even in mild cases; but the most certain diagnostic in this class of cases is the presence, to some extent, of albumen in the urine on the third or fourth day, usually on the third.

But all the problems so far suggested are preliminary to the great practical question of the prevention of the spread of yellow fever, which may be discussed under three different heads: (1) To prevent the introduction among us of yellow fever across the sea from foreign countries. (2) To prevent transmission of yellow fever from one part of our country to another by land. (3) To prevent the spread of yellow fever in our towns and cities after the outbreak of a few cases.

(1) The methods of maritime quarantine in this country may now be considered as definitely settled. They include the inspection of ships at the port of departure

and at the port of arrival, with such detention and disinfection as may seem advisable. The larger number of our seaport quarantines are little more than inspection stations. These are supplemented by a sufficient number of thoroughly-equipped refuge stations to which infected vessels are sent for treatment, said inspection stations being under the management of the marine-hospital service. I take some special interest in these refuge stations because they grew out of a recommendation made by me to the National Board of Health in 1879. In the meantime, a few of our large cities have well-equipped disinfecting stations of their own, that at New Orleans being probably the most complete and the most efficient in its appointments. I think it may be fairly admitted that our maritime quarantine affords us a considerable degree of protection; and, fortunately, an immense majority of the vessels that come to us from infected ports are themselves free from infection. I should say that nineteen out of twenty of all vessels from infected ports are free from infection, and might be allowed *pratique* without any preliminary detention or disinfection. However this may be, and in spite of all quarantine diligence, yellow fever will sometimes find a lodgment in some of our seaport cities. There is contraband of revenue, and there must be contraband of quarantine. The appearance of yellow fever in one of our seaports is the signal and the warrant for the imposition of quarantine by land.

(2) The difficulties attending the administration of sea quarantine are many and great; but they are few and small indeed when compared with the difficulties attending the administration of quarantine by land. Land quarantine virtually resolves itself into the quarantine of the railroads; but the railroads are so numerous, they link together the towns and cities of the country in such an intricate network of connecting and intersecting lines of travel, and the travel over them is so rapid and continuous, flowing always, day and night, in never-ceasing currents and counter-currents, that any adequate supervision of them becomes a matter of great perplexity and magnitude. The principle that underlies the practice of railroad quarantine among us is, that neither persons nor things shall be allowed to leave the infected place. To this end the railroad trains, both passenger trains and freight trains, are prohibited from stopping in or near the infected town, so that nothing can be taken on that is tainted with suspicion; and inspectors are kept on the trains so that nothing from the stricken community can be put off where it is not wanted—neither goods nor persons. This system of railroad quarantine is fundamentally correct, but in the administration of it the most outrageous excesses have been committed. The expenditures have been often so heavy as to be very burdensome to the corporations that have had to foot the bills; and commerce and travel have been interfered with to an extent not warranted by the imminence of the danger. The remedy for these evils is not far to seek. The several States concerned must place the administration of their quarantine laws in the hands of yellow-fever experts, and must give to such yellow-fever experts the power to overrule and supplement the work of non-expert municipal authorities. I have merely glanced at the subject of railroad quarantine, and must hasten on to the principal subject of my paper.

(3) What I want specially to consider is the management of yellow fever in our towns and cities after the occurrence of a single case, or of a few cases, so as to prevent its dissemination generally through the community; and in my judgment this sort of work depends on principles I now proceed to formulate. I confine myself to towns and cities, because in sparsely settled country neighborhoods yellow fever shows very little disposition to spread. It is urban and not rural.

(4) The extent and populousness of the town is an important consideration. The problem is difficult in proportion to the number of inhabitants, and in proportion

as residences and business houses are crowded together. In a small, sparsely settled railroad town, where the houses are scattered about at considerable distances one from another, the problem is simple. In a densely populated city it is a problem of great complexity and difficulty.

(5) The golden rule of prophylaxis in yellow fever is isolation—non-intercourse—non-intercourse with infected places, non-intercourse with infected persons, and non-intercourse with infected things. Don't go near the fire and you won't get burned. Non-intercourse can be enforced in a very simple, very inexpensive, and very effective way. Let the people, with one accord, by common consent, in the exercise of the commonest sort of common-sense, keep away from the infected houses and localities, and refuse to have anything to do with infected persons or infected things. To do this so as to secure absolute safety, it would be necessary for the members of every family to shut themselves up in their own premises, and to enforce a strict domiciliary quarantine against all the rest of the world. But a reasonable degree of safety can be had without resorting to quite such extreme measures.

(6) At the beginning of an outbreak the infection is restricted within very narrow limits—a single house, a block of houses, a single city square; and then it is necessary only to avoid the infected place or places, and to keep at a respectful distance the persons and things that have been exposed to the infection. Intercourse with other parts of the town is still perfectly safe. And, indeed, at this time a certain amount of intercourse with the infected region is also comparatively safe. You may go into the infected region many times and not take the fever. You may even nurse the sick for a long time without taking the fever. But while all this is true, no communication with the infected region should be allowed beyond what is strictly necessary. The pitcher that goes often to the well is apt to be broken in the course of time.

(7) In small places it would hardly ever be necessary to put guards around an infected house or an infected district. A simple warning to the people should be sufficient. In more populous communities guards may sometimes be desirable.

(8) But the sick must be taken care of—must have nurses and doctors. What must be done with these? The doctor who spends but little time with his patient is not likely to carry the infection with him into other houses he may have occasion to enter. Still, by possibility he may become a carrier of the infection, and his intercourse with other people should be restrained according to circumstances. The nurse has no need to leave the premises of the patient, and should be kept under the strictest surveillance. When the area of infection begins to extend and cases to multiply, arrangements should be made for the isolation of nurses and of all other persons engaged in taking care of the sick. Take a house within the infected region, or near by, or as many houses as may be needed, for this purpose. I cannot dilate on this; only let it never be forgotten that the most active agents for the spread of yellow fever in any community are nurses and doctors and other attendants upon the sick, when they are allowed to eat and sleep in their own uninfected homes or boarding-houses; and in dealing with these attendants upon the sick, let it never be forgotten that among all the agencies that have been invoked to prevent the spread of yellow fever, non-intercourse is the first in importance—is so decidedly first in importance that all the others sink almost into insignificance.

(9) The practice of disinfection is mostly based on hypothetical grounds. But I think we have good reason to believe that it does good. The agents most to be trusted are heat, cold, the mercury bi-chloride, and sulphur fumigation. It is not proven that the yellow-fever poison is connected in any way with the excretions of the yellow-fever patient; but I think the alvine dejections and the urine should be disinfected and disposed of just as we would the excretions of typhoid fever.

(10) The probability that a few cases of yellow fever will spread into an epidemic depends very much on the latitude of the place and the season of the year. It is very generally believed by those who have studied yellow fever, that it requires for its prevalence and dissemination a long-continued temperature of not less than 70° Fah. It takes some time for yellow fever to gain a footing anywhere and under any circumstances. It cannot make any considerable headway in less than two weeks, and it often requires a much greater length of time. Yellow fever in July or August is much more to be dreaded than yellow fever in September or October, and quarantines may be still useful a hundred miles south of an infected town long after there ceases to be any excuse for it a hundred miles north of said town.

(11) When a few cases of yellow fever occur in a city, the general opinion is that depopulation is the surest way to prevent it from expanding into epidemic dimensions. Take away the fuel, and the fire will soon cease to burn. This plan is plausible at first sight, and I do not question its efficacy. But it is attended with so many incidental disadvantages that it seems to me to be the most objectionable plan for general adoption that has ever been devised. It is not very difficult, indeed, to depopulate the infected district so long as it is restricted within narrow limits; and I believe that depopulation of an infected district may often be the highest dictate of sanitary wisdom. It would be quite possible, also, to depopulate a small town of only a few hundred inhabitants, or perhaps even a city of a few thousand inhabitants. But it would be folly to attempt to depopulate a great city like New York or New Orleans. But there is never any urgent need for the depopulation of small and sparsely-settled villages. In them yellow fever can be managed easily by other methods. And just precisely in proportion as the population increases in numbers and density, just in that same proportion increase the danger of the epidemic and the consequent desirability of depopulation, if that is to be accepted as the proper plan of management. In other words, the more we need the remedy, the greater becomes the difficulty of using it.

(12) With us depopulation, so far as it is accomplished at all, is accomplished only in one way, namely, by the wild and reckless stampede of a demoralized and panic-stricken people. Almost all who are able to go do so, and a great many who are not able. The impecunious are left behind to the mercy of the pestilence and the charity of the compassionate. In the meantime the depopulation is never complete. From one-third to one-half of the people are obliged to stay at home, because they are not able to pay the expenses involved in getting away and living somewhere else. And this is not the worst. These flying people spread panic wherever they go, the panic being far more infectious than the fever; and then follows an epidemic of quarantines. The big towns quarantine because they have so much at stake; and the little towns quarantine because they think they have as much right to be protected as their big neighbors. And such quarantines!—unlawful, extravagant, absurd, grotesque, foolish, cruel—in one word, abominable beyond all that words have power to give expression to. If the history of them could be written it would fill up a goodly portion of that history of human folly which Prof. Porson proposed to write in five hundred volumes.

(13) Another agency in the management of epidemics needs to be mentioned here—the agency of refugee camps. *A priori* one would think they would serve a good purpose, but practically they have always been failures, and they must continue to be failures. In the first place, it is next to impossible to get a place for the establishment of a refugee camp. People don't want refugee camps anywhere in the neighborhood of their residences, and won't have them. In the second place, when you succeed in establishing a camp it accomplishes comparatively little, be-

cause you cannot drive the people of the infected town into it; and I don't blame them for their reluctance. If you had the power of a Russian czar, by force of arms you might drive the people into the camp, but in no other way.

(14) I have thus endeavored, in a very brief and imperfect fashion, to indicate what we know of the natural history of yellow fever, and of the conditions which mark its propagation in time and space. I have, also, in the same brief and imperfect fashion, indicated some of the evil consequences of our present methods of managing yellow-fever epidemics. I need not go further back than the history of this present year to point the moral I have in mind. We have seen the people of the entire South wild with panic, flying recklessly from their homes, and scattering consternation and dismay all over the country. I suppose there is no other single consideration that stands so much in the way of Southern development as this specter of yellow fever which is always associated with our sunny climate in the minds of the people who desire to settle among us. How is all this to be changed? There is but one way. We must educate our people, our doctors, and even our health officials, to a better appreciation of the true character of the enemy we have to battle with. Let it be understood that yellow fever is not contagious from person to person as small-pox is; that in a majority of instances, when introduced into our communities, it fails to spread at all; that when it does spread, it spreads at first very slowly, so that the threatened people always have plenty of time to await the progress of events; that if it becomes desirable for the people to leave their homes, there will always be opportunities for them to do so in a systematic and orderly way. In a word, we must manage our yellow-fever epidemics in a common-sense business way. We must get rid of our panics, our stampedes, and our shot-gun quarantines. The guardians of the public health owe it to themselves and to the people they serve to effect such a change in public opinion as will make it possible in the future to avoid the follies which have convulsed and disgraced the country in connection with our yellow-fever epidemics during the last fifteen or twenty years.

REPORT OF THE COMMITTEE ON THE POLLUTION OF WATER SUPPLIES.

APPOINTED BY THE AMERICAN PUBLIC HEALTH ASSOCIATION.

In its report, at the last meeting of your Association, your committee explained in brief the ground of its belief in the harmfulness of sewage in waters used as potable supplies, whether these were derived from wells or larger sources; whether the water supply of an isolated dwelling or that of a populous city. Chemical analysis was shown to be in most instances inadequate to the detection of sewage, unless the sewage was present in unusual quantity, or the water unusually free from other organic matters; and the conclusion was reached that the inability of the chemical methods is of no practical importance, as the presence of sewage in the water supply can be determined by the sanitary inspector; and further, that for protective purposes the knowledge that sewage enters the water is all that seems to be required, because where there is sewage there is danger of typhoid infection.

Your committee desires to give special emphasis to the last-stated clause, because it believes that the endemicity of typhoid fever in our cities is in great part due to the sewage in the water supply. Many of our public water supplies contain sewage, and its harmfulness in a general way is unquestioned even by those who have a financial interest in them. Yet there appears to be a hesitancy to acknowledge the real, the specific danger. Typhoid fever is present in all our cities, giving annual death-rates of from 15 to 100 and over in every 100,000 of the population; but in the enumeration of its causes its prevalence is ascribed to many unsanitary condi-

tions before mention is made of the public water supply. It is allowed in certain local epidemics to be propagated from wells which have become infected by an infected sewage, but the sewage in the public supply is seldom considered other than as a sentimental objection to the use of the water. It is allowed in many instances to arise from leaks in the plumbing of houses, by which exhalations from infected sewers reach the interior of the dwelling, but the water supply into which the sewage of these very sewers is poured is used without a thought of its deadly qualities, unless, as in the case of Plymouth, Pa., the fact is forced upon the public mind that a public water supply has as little disinfecting power over the germs of typhoid fever as the private water supply of an infected well. Health officers condemn the well, and generally it is closed as soon as it is found that sewage percolates through its area of drainage: they should condemn the public supply on the same grounds.

The large financial interests involved in the establishment of a public water-supply may be assumed to be at the bottom of this hesitancy to acknowledge the specific danger attaching to the presence of sewage. Millions of dollars, perhaps, have been invested in that water-supply, and many more millions would be required to replace it by water from a purer source. These large sums are alone considered, and not the vast and annually increasing totals of the loss by sickness and death that might have been prevented. A public or private well involves but a small sum, so small that it does not stand in the way of sanitary progress. It is closed, and with its closure one more possible center of typhoid infection is removed; but the decreasing influence exercised by this on the annual rate of prevalence is small indeed if the public supply continues to disseminate the disease. The dollars and cents represented by the existing water-works may be regarded as a barricade to sanitary progress, or an altar on which typhoid fever sacrifices its victims.

The efforts that have been made from time to time to quiet the public mind by demonstrating the destruction of sewage and the self-purification of the water which contained it, are in part attributable to these financial interests; but only in part, for many sanitary inquirers have been deceived by partial and imperfect observations. Unfortunately, however, those analysts who have had much practical experience in following the track of sewage in its passage down-stream, recognize in this so-called self-purification only the results of sedimentation and dilution. Undoubtedly the natural processes of purification—the transformation of organic matter into ammonia, and the nitrification of the latter—operate in the current of a running stream; but these account for but a small proportion of the seeming purification, and there is no ground for supposing that the infectious principle of typhoid fever is given up to the action of these purifying agencies. We acknowledge that typhoid fever is propagated by an infected sewage in a well-water when all organic trace of the sewage has disappeared through the instrumentality of the agencies referred to. There are two kinds of organic matter in the dangerous sewage—matter which, by the absence of life, is given up to decomposition and reduction to harmless inorganic forms, and matter which by its vitality is preserved from these influences; and we acknowledge that in the well-water the former may be reduced, while the latter retains the full measure of its virulence. Analogy shows conditions of a similar character affecting our river-supplies, and the seeming apathy with which they are regarded can only be accounted for by assuming that individually we have fought against the barricade erected by the dollars and cents, and been defeated by its solidity and strength.

In this country the relation between the distribution of a water which contains sewage and the prevalence of typhoid fever can be readily observed by anyone who studies the mortality returns of our cities in connection with the *character* of their water-supply. The records in many instances are complete and trustworthy for the

past twenty years. Brooklyn, New York city, Cincinnati, Boston, Philadelphia, etc., have a death-rate from typhoid fever proportioned to the quantity of sewage which enters their water-supplies. Where the water-supply, as in the first-mentioned city, is free from sewage, the death-rate is low, about 15 in every 100,000 of the population, these cases being due to indirect infection and other local causes. When care is exercised in excluding sewage from the water-shed which furnishes the public supply, there is a corresponding freedom from typhoid fever, as in New York, which has a rate of 25, and Boston, which loses about 40 annually for every 100,000 of her people. In Philadelphia and other cities, in which less attention is given to the purity of the public supply, the typhoid death-rates are correspondingly increased. Moreover, the records of some of these cities give interesting information when viewed in connection with the *history* of the water-supply. The city of Baltimore has had a steadily diminishing rate since its water-supply was first introduced, and this decrease has been more notable since 1880, when the supply was largely extended. And this same city of Baltimore shows that its improved condition is not due to the introduction of a system of sewerage, but to the use of a purer water than was formerly furnished by its infected wells. Ordinarily, a sewerage system and public water-supply are contemporaneous improvements, and heretofore any benefit to the health of the community has been credited to the sewerage, although it seems as if the inflow of a wholesome water had really more to do with the lessened death-rate, for the small typhoid rate of New Orleans, Louisiana, cannot be attributed to the sewers of that city, since it has none; but it *may* be attributed to the water-supply, for that consists of rain-water, which is free from sewage inasmuch as the cisterns in which it is stored are not sunk in the soil, but raised considerably above the surface.

Testimony of a similar character has recently been developed by the experience of Vienna. In that city, from 1851 to 1874, well-water of an impure character was used to a large extent in addition to a systematized supply from the Danube. During this period the deaths from typhoid fever ranged from 100 to 340 annually in every 100,000 of the population. In the last-mentioned year a spring-water was introduced, and the death-rate from typhoid fever fell immediately to 50. Since then, by the disuse of impure wells and the extension of the new supply, the rate for the past three years has fallen to 11; and, inasmuch as the sewerage system was in existence during the period of high rates, the fall since 1874 is necessarily referred to the use of a water which is free from sewage. The fall in the typhoid rate experienced an interruption in 1877, when, owing to the freezing of some of the sources of the spring-supply, the water of the Danube had to be pumped into certain of the mains; and it is of importance to observe that the sections of the city which were chiefly affected by this epidemic were those in which the Danube water was distributed. According to Professor Nothnagel, typhoid fever has become such a rarity since the introduction of the spring-supply that when a case occasionally comes to the hospital from outside the city, he shows it to the students as one of unusual interest.

In the face of such testimony to the influence of a pure water on the typhoid rate, we cannot shut our eyes to the relation that exists between sewage in our streams and typhoid fever in the cities that are supplied by them, no matter how great may be the financial interests that are involved or sunk in the contaminated supplies. Now comes the inquiry, What are the measures that have been or should be adopted to lessen the evil?

As a rule the only effort made by our municipal authorities and water companies to purify our public supplies is by sedimentation. They select a pond which forms a natural sedimenting reservoir, or they throw a dam across a stream to form an

artificial one, or, in the case of large water-courses, they pump directly from the stream into specially prepared basins. Primarily these basins or reservoirs were intended to facilitate distribution and guard against a temporarily inadequate flow in the stream which furnishes the supply; but they were found to answer the purpose of clearing, and to that extent of purifying, a turbid water, provided they were large enough to permit the water to remain undisturbed for the needful length of time. When it is proposed to have additions made to the water-supply of a city, the construction of new basins is usually implied. As an instance, there are now at the city of St. Louis, Missouri, four settling-basins, holding eighteen million gallons each. The floors are paved with brick on edge, and slope towards the center and the river side. The sediment is floated off from the floor of each basin once in about four months, the quantity removed annually amounting nearly to 200,000 cubic yards. The wants of the city permit the water to settle only from eight to eighteen hours, while a period of thirty hours is required for a satisfactory subsidence. On this account an extension of the work is at present in contemplation. Surveys have been made, and land purchased, for larger settling-basins and conduits to carry the water to the present high-service or clear-water pumping-plant. The estimated cost of these improvements is three and a half million dollars.

The storage of a turbid water in such basins undoubtedly tends to improve its quality. No argument is required to show that the St. Louis water is better with its suspended matters at the bottom of the reservoirs than choking the distributing pipes, collecting in every containing vessel in the city, or settling in the alimentary tract of the water consumers. The subsidence of the inorganic matters which constitute the mass of the turbidity carries down a considerable proportion of the associated organic materials, and the clear water gives markedly better results as well on chemical analysis as on bacteriological examination.

Chemically considered, the tendency of the cleared water is to further purification. Organic matter steadily diminishes in quantity, and is replaced by ammonia and nitrates; but as this is effected by bacterial agencies, biologically the stored water progressively deteriorates after it has become clear by sedimentation. The bacteria increase at the expense of the organic matters which they destroy. A water which every chemist and every bacteriologist would pronounce a fair sample of potable water will be found, after a week of storage, to be swarming with bacteria. Daily experience forbids the condemnation of a good water merely because it has been stored for a week; yet the bacterial colonies that may be developed from it are infinitely more numerous than those that are found in a water which is impure even to the senses. Indeed, the bacteria in an ordinarily pure water, after storage, may be vastly more numerous than in another portion of the same water intentionally contaminated with sewage or other impurity and similarly stored for the same length of time. This it is which deprives the bacterial cultivations of that value which but a short time ago they were expected to develop as indices of the wholesomeness or unwholesomeness of a water. A chemical evidence demonstrating a tendency to purification by the conversion of organic matter into nitrates, through the instrumentality of bacterial organisms, is more consistent with every-day observation than the bacteriological evidence which suggests unwholesomeness by demonstrating the numbers of the bacteria.

But although the general tendency is to the reduction of organic matter in stored waters, it often happens, particularly if the water is rich in ammonia or easily decomposed albuminoids, that vegetable growths other than bacteria will be developed, giving a bad taste or odor to the water, and perhaps causing diarrhea in the consumers. These, which may be considered the accidents of storage, have been studied by many health boards and water companies; and the influence of heat, aëration,

exposure to sunlight, etc., on their development, has been determined with practical benefit in many cases.

Sedimentation is sometimes an exceedingly slow process, particularly when the mineral particles consist of finely divided clay. A week or more is required in some instances to give a clear water, and this involves a large expenditure for storage-basins. Hence, many have turned their thoughts to filtration as a prompt and efficient means of purification. Filtering-beds are in general use in England, but in this country they have been constructed only by a few cities, and in an experimental way. The results do not appear to have been satisfactory. The expenses attending them are large, and the coldness of our winters begets difficulties which have not been encountered in the milder climate of England.

But the failure of filtration on the large scale, and the imperfect results of sedimentation as carried on in the reservoirs, have given an impetus to the construction of filters for domestic use; and the success which has attended attempts to supply a clear water to manufactories and other large establishments has gradually led to more ambitious efforts. Of late some municipalities have investigated the means by which this filtration is effected: and the ability of the filters to supply a clear water on the large scale appears to have been demonstrated. As the method is patented, a certain hesitancy has been manifested by members of the Association in referring to it; but, patented or not patented, if it have a value above others in supplying a pure water, we should have full accounts from such of our members as have a practical knowledge of its operations in all their aspects. A member of the American Water-Works Association did not hesitate, at its last meeting, to invite attention to the success achieved at Atlanta, Georgia. He expressed himself as knowing but little of the chemical improvement that took place in the quality of the water, but so far as the mechanical results of the filtration were concerned he was perfectly satisfied. The surface of the water in the impounding reservoir is nineteen feet above the layer of coke and sand which constitutes the filter-bed, through which it is carried by gravity into the clear-water basin. The reservoir-water is generally so muddy from red clay and other suspended impurities that it is rarely fit for bathing or laundry uses; yet in the clear-water basin small objects may be plainly seen through it at a distance of twenty feet. The capacity is three million gallons daily, although the quantity actually filtered for distribution at the time of the report was only two million gallons. The cost of the filters and clear-water basin was \$55,000, and the daily expenses eight dollars for alum and two dollars and fifty cents for labor.

So much experience has been gained in the construction of these filters that filtration can no doubt be effected more rapidly and economically under the supervision of the patentees than on new plans which must be at first regarded as merely experimental. But if the attention of boards of health, water companies and sanitary engineers were directed to the development of the best filtering-plant, other and better methods might be suggested and carried into practice; or, if the patent process were proved to be superior to all others, the ability to express a prompt approval would be substituted for our present hesitancy. The passage of water through a filter-bed, the regular cleaning of the filtering material, and the addition of alum, iron, lime, or other precipitant, to the water, are the essentials of the process; but the patents necessarily cover only the specific mechanism by which these are brought into operation in that particular process. The natural laws of filtration and of mechanical and chemical action are open to the ingenuity of the world.

Recently Mr. L. H. Gardner, of New Orleans, has been experimenting on the large scale with solutions of iron, not as an adjuvant to filtration, but to hasten sedimentation in the settling-basins. Iron as a precipitating or filtering agent has been

used in various forms and to a considerable extent, on the large scale, as a water-purifier since Medlock, in 1857, patented a process in which water was treated by contact with metallic iron. Spongy iron attained even a popular repute as a filtering material, but at the present time in Europe it has been displaced by the Anderson process, which is said to be in successful operation at Antwerp, Ostend, Paris, and Vienna. The water in this process is first partially sedimented and then forced through a revolving purifier consisting essentially of a wrought-iron cylinder mounted on hollow trunnions, which serve for inlet and outlet pipes. Curved ledges, running lengthwise of the cylinder on its inner surface, scoop up and shower down fine borings of cast iron through the current of the water. By the combined action of the cylinder and the water-current every portion of the latter is brought into contact with the iron, the particles of which are kept constantly bright by friction against each other and the sides of the cylinder. After this the water is passed through sand filter-beds to remove excess of iron. The results claimed are that the organic matter is altered in its chemical nature, and the albuminoid ammonia lessened from one-fourth to one-half of its original amount; that the water is softened, the scale in boilers becoming greatly reduced, open, friable, and loosely adherent to the plates; and that the microscopic life of the water is, to a large extent, destroyed or removed. At Antwerp the quantity of the water thus treated is two million gallons daily, and the engineer in charge of the works and the municipal authorities have expressed their satisfaction with the results attained.

The various methods of purification by iron that have been tried in Europe involve the contact of the water with natural or prepared ore or cast-iron borings or turnings, with a subsequent filtration through sand to eliminate any excess of iron; but Mr. Gardner has suggested the introduction of a solution of iron in the precise quantity needful for the desired purpose. He tried a solution of red hæmatite ore in hydrochloric acid on Mississippi water at the New Orleans water works, and the clarified water gave satisfactory results to Professor Chandler, of New York, and other chemists. Later, he treated a body of thirteen million gallons in the St. Louis settling-basins. The solution used, the water in various stages of precipitation, and the clear resultant water, all met with favorable reports from the analysts. The action is chemical, not mechanical. The combinations of lime and magnesia in the Mississippi water become converted into chlorides by the chlorine of the iron solution, and the precipitated oxide of iron settles promptly, carrying the suspended matters with it, and leaving the water clear. A solution of the specific gravity 1.6 in the proportion of 1 part to 20,000, clarifies the muddiest of river waters, without hardening them or leaving in them any excess of the precipitant. The Mississippi water at New Orleans can be thus clarified by a rest of eight hours in the reservoir at an expense of one cent for every thousand gallons. Mr. Gardner's object at the present time is to procure a cheaper iron solution.

In the efforts to attain to a prompt and efficient method of purifying water by sedimentation or filtration, with or without the use of precipitants, it is of the utmost importance that the object of the purification be kept steadily in view, lest we fall into the error of supposing that the end has been accomplished when a clear water has been obtained. The agents of a certain patent filter place in the show windows of some prominent store two companion glass jars, one filled with an opaque and discolored turbidity overlying a stratum of heavy sediment, and labeled "Water taken this morning from the public mains;" the other, sparkling like a consolidation of dew-drops, and labeled, "The public water, after passing through so-and-so's filter." A glance at these gratifies the passer-by, by seeming to instill into his mind so much sanitary knowledge. They sow seeds of reflection which develop and multiply with bacterial fecundity, so that in a few minutes they have done the

work of an octavo pamphlet on "Potable water: its impurities, and the methods by which they are removed. But the sparkle of the filtered water, although honest in itself, hides a fallacy which undermines the whole of the suggested argument. It must be remembered that clear waters are not necessarily wholesome waters. Their sparkle is no proof of their purity. From the laundresses' point of view, or the paper-makers', the result is satisfactory; but the object of the filtration of a water supply for domestic or public service is its wholesomeness when used for drinking, and its transparency gives no testimony on this subject.

During sedimentation the heavier and grosser particles of mineral matter readily subside, and carry down with them much of the flocculent organic matter which would otherwise continue in suspension for many days. The effect of sedimentation at St. Louis, Missouri, has been mentioned, but it will perhaps be better appreciated when stated in other words. The lake-supply of Cleveland, Ohio, which is usually of excellent quality, is occasionally turbid, particularly during the spring months. When in this condition of turbidity the twenty million gallons, which are distributed daily, contain ten and a half tons of suspended matters, and the odd half ton consists of decomposing organic substances. Who will say that the city of Cleveland would not be benefited if it did not have that daily distribution of half a ton of semi-putrefaction? But sedimentation does more than free the water from suspended matters. During the so many hours or days of its continuance the processes of nature are at work transforming the semi-putrified matters into ammonia and nitric acid, both of which are harmless in the quantities present. The purifying influence of sedimentation may be easily determined by chemical analysis, and in many cases it is so marked as to render the process of infinite value in the absence of a better method.

Most surface waters, which are turbid from particles of mineral matter, contain the germs of nitrification, and the process of purification takes place in them during storage; but if these germs be absent, months may pass with but little improvement in the character of the stored water. Hence, cisterns which do not contain these bacteria have usually a less pure water, as judged by the ammonia and albuminoid ammonia which it yields, than those which do contain them. Where wooden tanks, as at New Orleans and other Southern towns, are used for storage, it is a common occurrence for the analyst to find water of poor quality in new or recently-cleaned cisterns, while water of a much better quality is discovered in those that have not been cleaned for a year or two, and have a fermenting sediment a foot or more in depth covering their floor. The nitrifying agencies accumulate with the sediment, and, notwithstanding the sediment, they succeed in reducing the organic matter of the water to the inorganic condition. The sediment is thus an advantage, but the end is better accomplished by keeping it out of the cistern and introducing the bacterial workers through the medium of a layer of clean gravel or sand.

But withal, it must be remembered that it is only organic matter in a state of decay that is thus reduced to the inorganic condition, and only organic matter in a tangible form that is thus carried down by the heavier particles of the mineral sediment. Organic matters that are endowed with vitality remain uninfluenced by the destructive and reconstructive bacterial agencies that are operating in the water; and these, as has been seen, are the matters from which most is to be feared if sewage has unfortunately had access to the supply. The infected water which prostrated 1,200 of the 8,000 inhabitants of Plymouth, Pa., and killed 130 of those whom it prostrated, passed through three storage reservoirs on its way to accomplish its deadly mission.

Nor is filtration more efficient as a purifier when viewed from the standpoint which sees typhoid fever disseminated by an infected sewage in the water-supply.

A satisfactory filtration removes the haze or cloudiness which may pervade a sedimented water for days after the grosser particles have subsided, and in so far its results are better than those generally effected by sedimentation. The finer particles of clay, some no larger than barely distinguishable molecules under the ordinary working powers of the microscope, are removed, and with them organic shreds of similarly minute size, and even many of the bacterial germs which were present. A water thus freed from foreign matter in suspension seems to offer the lustre of its transparency as a voucher or visible symbol of its purity, and chemical analysis may show in it only the merest trace of organic matter in solution, for the processes of decomposition and recombination of the organic elements take place with much greater rapidity when the water percolates through the pores of the soil, as in the natural process of filtration, than when it is merely stagnant in a reservoir or flowing in the current of a stream. It is now well known that the bacterial agencies which effect these changes have their habitat in the three or four feet of soil which constitutes the surface of the earth, and that in soaking through this layer the organic matters of a water are transformed into matters which the roots of living plants can absorb and assimilate. Chemical analysis may therefore show in such a water merely the small quantities of ammonia or nitric acid which are the results of this bacterial action, and the water may be claimed^d to be pure on much stronger evidence than can be advanced on behalf of any water which is massed on the surface in a lake, pond, river-bed, or settling-basin, these surface-waters having at work in them only those straggling bacteria that have been washed from their habitat in the soil into the current of the stream. In fact, so far as can be demonstrated by chemical tests, the naturally-filtered water may be free from everything of an organic nature.

In view of our knowledge of the conditions needful to a perfect natural filtration, it is impossible to allow that artificial means, operating after nature's methods, will ever produce as pure a supply as can be procured in suitable localities by digging a hole in the ground. Comparatively speaking, only a small quantity of rain falls on a stated area,—a depth of so many inches during the course of a year,—and of this a large proportion is turned aside for the general police of the surface, and, having fulfilled its mission, is carried off by surface channels to the ocean, while another part of the fall cools the overheated surface of the soil by its evaporation, and gives the air that proportion of moisture which is needful to the continuance of life under present conditions. Only a few inches of the annual rainfall penetrates the soil, and, escaping the roots of the living vegetation, collects on the surface of some impervious stratum as the surplus water poured into a flower-pot drains into the saucer below. Artificial filtration has neither the time nor the surface to effect percolation after nature's method. Filtering-beds of gravel are prepared which permit more water to pass through them in a day than nature percolates through the same area in a year, or special filters are constructed which transmit, under pressure, as much water in half an hour as nature purifies on the same area annually. The bacteria of nitrification cannot be harnessed to the work of artificial filtration, and hence the results of such methods, although manifesting a satisfactory freedom from suspended matters, can in no instance compare with the organic purity which characterizes the spring and well-waters that are found in the laboratory of nature. Since the bacteria of the artificial filtering-beds are unable to deal with the organic matters dissolved in the percolating water, it is needless to expect them to reduce the masses of organic matter which in progress of time clog the filter with their accumulated foulness, and lessen its efficiency as a filtering medium. The artificial filter cannot, therefore, furnish a water which will be as pure as a naturally pure water. In fact, artificial filtration amounts to little more than the mechanical separation of a water

from its suspended particles, while the essential of natural filtration is the thorough nitrification of the albuminoids of the water, the removal of suspended matters being incidental and merely secondary.

The decay of once living organisms, animal or vegetable, gives more or less taint of a putrefactive nature to the surface-waters of the earth, and this taint, when of sufficient strength, is known to induce diarrheal tendencies in the human system. Moreover, among the fermentations which take place during the destruction of organic matter, is one which gives origin to an influence—the malarial—which is always disabling and often deadly to human life, pervading the surface-waters to a dangerous extent, particularly in warm climates and seasons. By the process of filtration nature removes both the putrescent and malarial taints from the water, yielding a supply which is held to be pure and wholesome by the ever-increasing testimony of the generations of the world. The malarial influence is attributed to a micro-organism. If this view be correct—and the tendency of medical science is to accept it as the only theory which gives a satisfactory explanation of the malarial phenomena—the vitality of the germ should preserve it from the putrefactive and nitrifying agencies, for these operate only on dead matter. It is therefore probable that only the mechanical part of the process of natural filtration is concerned in the removal of the malarial influence from a water, and that an artificial filtration which gives satisfactory mechanical results will be of value in the prevention of malarial disease.

Although the bacteria of the soil do their work so thoroughly that no chemical trace of existing organic matter can be found in the percolated water, it sometimes happens that this water is unwholesome. When collected at a distance from the haunts of man, it is as pure as it looks, for Nature's methods always suffice for her necessities; but where the activities of human life create artificial conditions, such as result from the aggregation of individuals in cities and towns, her methods fail because they cannot be carried out. The soil becomes more and more contaminated by animal excreta, and the wells, reservoirs in which are collected the leachings or washings of this impurity. If the impure soil be colonized by the infection of typhoid fever, it is immediately converted into a breeding-ground for the germs of that disease. The vitality of these germs preserves them from putrefactive agencies, and their size seems to offer no obstacle to their passage through the soil. They therefore drain into the well, and confer upon its clear waters powers of a most deadly character. In the records of sanitary science are to be found many epidemics of typhoid fever chargeable to wells that have become contaminated by sewage. Indeed, the more the transmission of typhoid fever is studied, the more evident it is that the water-supply is the main agency concerned in its propagation. Hence, sanitary officers have not only closed up wells into which sewage has entered, but those which, from their situation, are merely exposed to this danger.

Since natural filtration is powerless against the infection of typhoid, it is evident that artificial methods can give no guaranty of protection.

The purifying influence of precipitation by means of such chemicals as alum, iron, or lime, can readily be demonstrated by chemical analysis. The hydrated alumina, ferric oxide, and lime carbonate, as they materialize into particular existence from their solution in the water, entangle and carry down with them organic particles that would otherwise be less easily removed; and biological research shows that bacterial germs are swept from the water in like manner. That this operation is imperfect, is demonstrated by the number of colonies which can be developed from the cleared water; that it is purely mechanical and not germicidal is indicated by our experimental knowledge of the action of such substances on various bacterial organisms, and by the fact that their presence does not exercise even an antiseptic influ-

ence on the bacteria of the water, as the number of these bacteria subsequently increases in the cleared water as rapidly as in a stored water which has had no such chemical treatment. The commercial interests concerned in artificial filtration invest these substances with the title of coagulants, as if the albuminoid constituents of inorganic life curdled into a bacterial *rigor mortis* as soon as the water became pervaded with the presence of the precipitant; but there is no warrant for a belief in any protective virtue other than that connected with a mechanical entanglement and precipitation.

The processes of purification that have just been reviewed remove suspended matters, and more or less of the dissolved saline and organic substances that are present in the water, but none of them can lay claim to the removal or destruction of the causative agencies of the acute infectious diseases that are known to be propagated by an infected water-supply. These processes have been closely studied by the English sanitary authorities, who long ago came to the conclusion that sewage in a water is harmful because it may contain the germ of cholera or typhoid fever, against which the most efficient method of artificial filtration constitutes no effective safeguard. Hence, the object of sanitary legislation in England is not to preserve the rivers as a drinking-supply, but to prevent them from becoming a nuisance in their character of open sewers. The solids of sewage consist of a highly-nitrogenized organic matter, the proper disposition of which, in the economy of nature, is as materials for the growth of the vegetable kingdom, and, if these be separated, the water may be purified by percolation and filtration and returned to the rivers. Sewage has accordingly been treated in various ways for the separation of the solids and the reclamation of its water. In country houses and small communities a cesspool can be provided for the deposition of solids, the liquid overflow being conveyed by drain-pipes into the soil. The effluent water in such cases may be as pure to chemical tests as that of the stream into which it is discharged. But as communities grow, the difficulties attending the disposition of their sewage are proportionately augmented.

Various methods of precipitation have been tried with the view of paying expenses by the sale of the solids as a fertilizing material, while the separated liquids are turned into the water-courses, with or without an intermediate filtration through the soil. Sewage irrigation has also been tried on the large scale, and in many instances with satisfactory results. The advocates of irrigation point with considerable enthusiasm to the purity of the effluent water, and consider that this system will ultimately settle the vexed question of the disposition of sewage; and, indeed, such is the purifying influence of the soil, that the clear water of the outflow gives relatively good results on analysis. But, as we have seen in speaking of sewage-polluted wells, the purity which is evidenced by chemical tests fails to give an assurance of protection from typhoid fever, and it is this protection, not chemical purity, which is the object in view. These advocates claim that typhoid fever does not prevail in the fields which receive the sewage of an infected city, but it is the propagation by drinking-water, not by exhalation, in which we are interested, and typhoid fever is known to have prevailed on fields where the effluent water was used for drinking. Indeed, how could we expect otherwise when we know that typhoid fever is propagated by an infected sewage in a well-water which has undergone a more efficient filtration through the soil than that to which the sewage is subjected in the irrigating fields, or when we remember that the spring-waters which occasioned the epidemic at Lauzen were derived from a sewage-polluted stream spread over the fields of an adjoining valley for purposes of irrigation?

In view of the considerations which we have thus briefly reviewed, we cite the opinion of the English commissioners, to give it greater emphasis as reaffirmed

after the passage of years which have added much to our knowledge of the propagation of infectious diseases by means of the water-supply: "Of all the processes which have been proposed for the purification of water, or of water polluted by excrementitious matters, there is not one which is sufficiently effective to warrant the use, for dietetic purposes, of water which has been so contaminated. In our own opinion, therefore, rivers which have received sewage, even if that sewage has been purified before its discharge, are not safe sources of potable water." A water to which sewage has access should from that fact alone be excluded from all further consideration as a possible water-supply for drinking purposes.

The introduction of a water-supply into a growing city is ordinarily only a question of money. Engineering difficulties fade into insignificance when surveyed from a satisfactory financial standpoint. It is often said to be beyond the power of money to purchase health, but the sanitary student can readily demonstrate that in many cases this is not so. Money expended in the distribution of a wholesome water-supply will purchase health for the thousands who otherwise fall victims to the fever which is endemic in our cities and towns. Typhoid fever is a disease to which every one is exposed. The susceptibility to it is inherent in our constitutions, and, so far as we know, immunity can be purchased only by submitting to attack. Ordinarily the human constitution succumbs to its influence before maturity is reached, but if up to that period we fortunately escape, we have no assurance of future immunity. Uncertainty overhangs us like a cloud. Danger is present with us in the daily routine of our peaceful lives as on the battle-field, only that the embodiment of evil is an invisible and intangible germ instead of a fast-flying bullet. Danger flows beside us in our streams, in our mains, from the taps in our houses. The germ of the disease may not be in this pitcherful or in that, in this tumblerful or in that, but it will find us some day if we continue to use the water which contains it. In a town of fifty thousand inhabitants one victim is taken daily, and as the average duration of this disease is about a month, there are always in that city thirty persons whose lives are unnecessarily trembling in the balance.

What is the local suffering from yellow fever in Jacksonville, Pensacola, or New Orleans, once in so many years, compared with the totality of the destruction caused by the steady progress of this general and ever-present scourge? Thirty thousand people die of typhoid fever annually in the United States of America, and Vienna lowered her losses by this fever from three hundred and forty to eleven annually in every one hundred thousand of her population by introducing a spring-water supply instead of the sewage-tainted waters of the Danube. Calculate the loss by sickness associated with these thirty thousand deaths—the loss of work, the unprofitable work of nursing, and the actual outlay necessitated by each visitation of the disease—and you will find that saving money by drinking sewage in the water-supply is a penny-wise policy that in the long run will fail to pay even for the funerals and the mourning goods.

In many instances it is, on this continent, an easy matter to obtain a suitable supply for a community. Some neighboring lake offers itself as a natural reservoir, requiring only the construction of conduits for the transmission of its waters; or an artificial reservoir may be formed by damming certain of the radicles of a neighboring stream. The drainage area of this supply must be kept under the closest supervision by the sanitary authorities of the community, for it is not enough to obtain a supply which is free from sewage: it must be kept so. Constant vigilance is the price of safety. The sanitary inspector should be ever on guard, and familiar with every square yard of the surface, and the health authorities should be empowered to protect the many against the carelessness or wanton encroachments of the few. The question of water-supply is here reduced to its simplest terms:

the raising of sufficient money to bring in the wholesome water, and the investment of the health officer with power to preserve the wholesome quality of the public supply, and to prevent the use of water from sources which are known to be unwholesome.

In other instances, it is difficult to obtain a suitable water-supply. The whole face of the country has been more or less settled, and the natural drainage of every valley brings sewage and manufacturing waste into its outflowing stream. Nevertheless, now is the time to act, for these unfavorable conditions will increase and multiply in the future, so that what may be done now cannot be done then without a tenfold expenditure of time and money. Fortunately, when difficulties occur from the density of the settlement, there is also more wealth to meet the increased expenditure, but it is beyond the power of that wealth to give life to those who have in the meantime fallen victims, or consolation to the hearts that are in mourning. What is to be done should in all cases be done at once. It is *we* who are interested in this matter—now, in our own time and generation; for what does it avail us that the city is supplied with pure water ten years hence, if at that time it be remarked of us: "Oh, yes, I remember him well; he died of typhoid fever eight or nine years ago." And it is an easy matter to so arrange the financial burden that part of it shall fall on those who will hereafter participate in the benefits.

In well-settled sections of the country it may be impossible for the towns and villages to obtain a water free from sewage in their main streams or their neighboring tributaries, and equally impossible for any one of them to go to the nearest sources of pure water for a supply, but those favorably situated for combined action may easily perfect their arrangements for bringing in the water from long distances. Nor should it be forgotten that if water free from sewage is not to be obtained on the neighboring surface, it may sometimes be found beneath the surface, as at Brooklyn, L. I., or, more notably, at Memphis, Tenn., where, after a thorough investigation of the whole subject by a committee of citizens, it was ultimately developed that they had a source of the purest water within a hundred yards of their domestic hearths.

Many communities have a water-supply which was pure enough when originally introduced, but which has become dangerous by the subsequent growth and development of which it formed the nucleus. A water-bed or basin cannot be used for concurrent purposes of water-supply and sewage discharge. If the drainage area be given up to settlement and commercial enterprise, with their consequent sewage and manufacturing waste, the city must be prepared to find another source of supply for its daily wants, or pay the penalty of an increased death-rate from preventable disease. In the race for material prosperity this penalty is too often forgotten, and the endemic fever is regarded as one of those visitations of Providence that are inevitably consequent upon conditions of aggregation. Yet every intelligent medical man knows the fallacy of this reasoning, and that the progress of this malady can be checked by suitable measures as surely as exotic disease can be kept out of the country by properly enforced restrictions on commerce. To permit the citizen to enjoy life, which, according to the constitution of the United States, is his right, the most stringent laws should be enforced to preserve the purity of the supply of drinking-water; or, if the settlements on the area are too valuable to be destroyed, a new source of supply should be obtained and guarded.

The protection of the citizen requires that every advantage be taken of our knowledge of the natural history of the typhoid infection, that it may be destroyed before reaching any of our water-courses. It is well enough to insist upon the purification of sewage by processes of precipitation, filtration, or irrigation before its water is delivered into the natural courses, for thereby the latter will be pre-

vented from falling into the condition of open sewers, which is the lot of so many small streams in well-peopled districts; but these processes cannot be depended upon to remove the typhoid infection. This infection passes from the patient to our surface-waters directly by the sewers, or it drains through the soil with the sub-soil water, and reaches the surface on some lower level. Of course, in either case it may be lost in the mass of water in which it is diffused, but it was not so lost at Plymouth nor at Lauzen. To protect the citizen and stamp out this fever, it should be made the duty of every medical man who attends a case of fever to see that the excreta are disinfected before being consigned to the sink, cesspool, or sewers, and the utmost care in this regard should be taken in cases occurring on a water-shed which is utilized for a public supply. So far as our knowledge goes, sewage would be deprived of that which, under ordinary conditions, constitutes its only dangerous element, were this system of bed-room disinfection efficiently practiced.

Local authorities, such as water companies and boards, citizens' committees, health boards, and commissioners, should exercise a jealous guard over the public water-supply; but in many instances these would be powerless without the intervention and coöperation of the authorities of the State. Massachusetts, Illinois, and Minnesota have already taken steps in this direction. In the first-mentioned State the Board of Health is invested with the general supervision of the water-supplies. No sewage, drainage, excrement, or other refuse or polluting matter of such kind or amount as—either by itself or in connection with other matter—will corrupt or impair the purity of a water used for domestic purposes, is permitted to be delivered into a water-course or any of its feeders within twenty miles above the point where a water-supply is taken. Upon the application of a city or town to the supreme court, alleging the pollution of its water-supply in violation of law, an injunction may be issued, or the polluting substances required to be so cleaned or purified that they shall no longer be deleterious. The limit of twenty miles in this law is a defect, but sanitary legislation is a thing of slow progress, and our friends in Massachusetts undoubtedly secured as much as was possible for them to obtain at the time.

The board is required to examine the waters from time to time, for the purpose of ascertaining whether they are adapted for use as domestic water-supplies, or are likely to impair the interests or imperil the health of the public. It is required to conduct experiments to determine the best practicable methods of purification, of drainage, and of the disposal of refuse, and to recommend measures for the preservation of the purity of the waters. Moreover, it is the legally constituted adviser of cities, towns, corporations, firms, or individuals, in matters pertaining to the introduction of water-supplies or sewerage systems, making use of its knowledge and facilities on their behalf in regard to source and quality of water and methods of sewage disposal, having regard to the present and prospective needs and interests of other communities or individuals that might be affected thereby. The approval of the board is a legal requirement to the consideration by the legislature of any application for authority to introduce any system of water-supply or sewerage.

The board is also empowered to consult with and advise those engaged, or intending to engage, in any manufacturing or other business as to the best practicable method of intercepting, purifying, or disposing of any drainage or refuse that might result from the business to the detriment of the waters of the State. It is required to bring to the notice of the Attorney General all instances which may come to its knowledge of omission to comply with existing laws respecting the pollution of water-supplies and inland waters, and to report to the Legislature any specific cases not covered by the provisions of existing laws which, in its opinion, call for further legislation. Finally, and very materially, the board is provided with

funds to sustain the corps of engineers, chemists, and inspectors, whose labors are needful to the proper performance of its duties.

The report of the board's proceedings under these heads, submitted to the Legislature in January of this year, shows the excellent work that may be accomplished in this way. Eleven applications from cities and towns for advice concerning water-supplies were received, eleven for advice concerning sewerage, two soliciting action to prevent the contamination of particular water-supplies, and one from a manufacturer for advice concerning the disposal of drainage from certain works which he purposed establishing. The important question of a water supply for the cities of Boston, Chelsea, and Somerville, and the town of Everett, was one of those that came before the board. There are one hundred and twenty-three sources of public water-supply in the State; but over two hundred samples are investigated chemically and biologically every month, the samples being from rivers, ponds, and other sources that may be utilized in the future. Experiments are also in progress on methods of sewage-disposal, which will add considerably to our knowledge of the results which may be obtained in that direction.

With the aid of the State, the local authorities in their efforts to obtain and preserve a wholesome water-supply would experience no difficulty that could not be overcome by the expenditure of the necessary funds. The twenty-mile limit will in progress of time be blotted out, and the waters of the State be sharply divided into those which may be used as sources of domestic supply and those which carry off the waste water. The water-supply and sewerage systems of the State—of the country—should be as distinct as those of every household, and the sooner this is accomplished the sooner will the rates of sickness and death be decreased among our people.

Your committee, therefore, urge a livelier interest in this important matter on the part of State boards of health, an interest which is not satisfied with discussing and subscribing to sanitary views of the subject, but which will leave nothing undone that will tend to invest them with power to act for the preservation of the public health. With all our boards operating, each within its domain, there would be no need of a committee of this Association to investigate the subject of water-pollution. In concluding, we submit the following resolution:

Resolved, That it is the well-considered belief of this Association that it is an imperative necessity, especially in the more populous States, that State legislatures should give their boards of health that financial support which would enable them to act intelligently on all questions pertaining to the public water-supplies, investing them at the same time with the supervision of the said supplies, and with power to preserve these waters from contamination by sewage or other injurious matters.

CHARLES SMART.
S. W. ABBOTT.
G. C. ASHMUN.
W. W. DANIELLS.
EDWARD PLAYTER.

The following paper was read before the American Public Health Association at its Fifteenth Annual Session, held in Memphis, Tennessee, November, 1887.

THE NECESSITY OF INSPECTION OF ANIMALS REQUIRED FOR FOOD.

BY CARL H. HORSCH, M. D., DOVER, N. H.

Among the number of persons who have made efforts to prevent the eating of diseased animal food, Moses was the first well known.

The commands in the Talmud are—

1. The animal shall be killed with a sharp knife, and with three cuts. If the knife

has a jagged edge, or the animal breaks a leg when falling at the time of butchering, the meat is condemned.

2. To eat no meat from a diseased animal.
3. From an animal which has died suffering with tympanitis.
4. Animals which have jaw-worm.
5. Lameness from any cause.
6. No meat from calves under eight days old.
7. No meat from sheep suffering with tetter.

8. Diseases of the lungs; abnormal formations; more lobes on one side than on the other—on the right 3, 5, 7—left 4, 6, 8; adhesions; indurations; patches; water blisters; matter in the vessels; if the lungs are flabby, dry, black, yellow, whitish, fleshy, or if coagulation of dark, stringy blood is found in the vessels.

9. No suppuration or other diseases of the liver, spleen, or kidneys.

10. No sharp things in the stomach which perforate the tissue of the walls, and have pus on them.

Meat from healthy animals, and where the large vessels have been cut out, is called *kausher*.

Regarding eating pork, and no fish without scales, was most likely a dietetic regimen for the conditions of the Israelites. In tropical regions, and against prevailing diseases, as leprosy, and other forms, it would be well if the rational parts of those commands were obeyed by all nations.

Dr. Most says: "Only healthy animals should be butchered and their meat used for food. The signs of health are,—the animal moves around and appears lively; by applying a gentle pressure on the back does not bend the ears or tail; the eyes look clear and bright; the body is well formed and nourished; rumination of the cud is carried on well; no saliva flowing from the mouth; no blisters or pustules on the mucous membrane; breathing is normal; no cough, groaning, or gasping; the skin is not tightly grown to the body; free from pustules, scurf, or scales; temperature, normal; the hair is glossy. After skinning the animal, we find no boils, tumors, pustules, and no black spots; the meat is firm and has the characteristic fresh smell. Meat is not fit to eat from too old, too young, or from sick animals; such meat is hard, tough or soft, pale, watery, or greasy; the fat is soft, green, or yellow. By opening the chest of a healthy animal, there is no putrid, bad-smelling exudation, no white patches or ulcers, no difference in color, and no disease in the surroundings of the lungs. In the stomach and bowels we find no red spots, soft, gray-black places, no dry, dark-looking remains of food. The best meat comes from healthy animals of middle age. The appropriate age to fatten oxen is from five to eight years old. Calves should be at least three to four weeks old, dropped the umbilical cord, and have the last milk-teeth. Veal and mutton should be kept from two to four days; beef and pork, four to six days; venison, four to ten days; fowl, two to four days. Fish should be cooked soon after they are killed. The meat of animals which have been driven fast before slaughter is darker, heavier, contains more blood, and decomposes sooner. The meat of animals killed by lightning is not good for food. Some butchers inflate mutton to make it look plump, but such meat may contain the fetid breath of some person."

Dr. Most cites the following cases: A man contracted a malignant fever, and died after salting the meat from an ox which had been sick with *Viehseuche* (murrain). A family died after eating the meat from a hog which had been sick with *Bräune* (agria). In Marburg, Steinmark, several persons died with hydrophobia, who had been eating meat from cattle which had been bitten by a mad dog.*

* Ausführliche Encyclopædia der gesammten Staats-Arzneikunde, von Georg Friedrich Most, Doctor der Philosophie, Medicin, Chirurgie, und Geburtshülfe, etc., etc.

In 1869 I was called to see a patient in Dover, N. H. The gentleman was seventy years old, a man of regular habits; had been most of the time of his life healthy and strong, until March, 1869, when two of the lymphatic glands on his neck, and several of the inguinal glands, became enlarged. After examination and deduction of other diseases, I had to diagnose scrofulosis. The patient was a reliable, intelligent observer. He stated that he had never had any sign of said disease in his life, and that there was no case of scrofulosis on his father's side or on his mother's side. After I found out where my patient bought his meat, I ascertained that his butcher had slaughtered and sold the meat of an ox which had a large swelling near one of his ears. The gentleman who saw the animal called it a wolf. This was a case where I found no other cause than diseased meat.

Two years ago a farmer brought a fat, well-looking turkey into my house. When it was prepared for roasting, my wife found a very large liver, with white patches about as large as a cent all through the tissue. On further examination, it was determined that it was fatty degeneration of the liver; and decided that the rest of that fowl would perhaps be better relished by the worms.

Glanders, hydrophobia, malignant pustule, splenic fever, tuberculosis, trichina and other diseases are dangerous, and communicable from animals to man; but when we consider the diseased animals, and their meat used for food, there is not only the aversion which we have against eating diseased meat, but certainly more danger to man of contracting diseases by the meals.

Prof. D. E. Salmon, Chief of the Bureau of Animal Industry, sent the following answer to a letter from Mr. James W. Bartlett, of Dover, N. H.:

WASHINGTON, D. C., February 12, 1887.

SIR: In reply to your communication of the 9th instant, referred to by the Commissioner of Agriculture, I would state that, so far as I know, there is no systematic and complete inspection of cattle killed for beef in any State in the Union. Many States have beef inspectors, but, as a rule, they do not inspect all the beef; and in most cases do not see the animal before it is slaughtered, or the internal organs when they are removed. They simply look at the beef after the carcass is dressed. Such an inspection is not sufficient to discover all cases of disease from which carcasses should be condemned. I have no special information in regard to the inspectors or inspections in Omaha or in Montana.

Very respectfully,

D. E. SALMON, *Chief of Bureau.*

In an interview with Dr. S. H. Durgin, physician of the City Board of Health, Boston, Massachusetts, Mr. James W. Bartlett ascertained that Boston has had inspection of cattle and meat three years. All the cattle are inspected two or three days before the slaughtering, and the inspector sees the animal killed. If he suspects any disease, he inspects the heart, liver, lungs, etc., but does not make a general practice thereof. In case the animal shows evident signs of disease before killing, it is slaughtered in the rendering-house, away from all healthy animals. In the case of a dispute it is referred to the City Board of Health, whose decision is final. Dr. Durgin stated also that a large amount of tuberculosis in cattle, especially in cows, had been found.

In order to have a better safeguard for the prevention of the use and sale of diseased animal food, every animal should be inspected by competent persons before slaughtering, and the internal organs thoroughly examined afterwards. The members of the American Medical Association, medical societies, National Board of Health, American Public Health Association, State and local boards of health, and every well-meaning practitioner and citizen, will see the importance of such sanitary measure, and make an effort to impress it upon the minds of the representatives of the United States, States, counties, cities, and towns, that it is for their own and the safety of over sixty millions of inhabitants, and thousands of persons traveling in

this country, to pass a law and make appropriation for such protection, and to give the able ones of eighty-five thousand six hundred and seventy-one physicians and the veterinary surgeons a chance to carry out that very much needed part of State medicine.

THE BENEFICENT AND MALIGNANT FUNCTIONS OF MICRO-ORGANISMS.

BY PERCY F. FRANKLAND, PH.D., B.SC., F.C.S., F.I.C.*

If nature had provided us with eyes one thousand times as powerful as those with which we are at present obliged to be contented, we should form a very different idea of the living world around us. The living creatures, both plants and animals, with which we are now familiar, would fall into utter insignificance, as regards their number, by the side of the countless millions of diminutive living particles which would then come into view. These minute living forms would be seen to infest all our surroundings—floating in the air we breathe, swimming in the water we drink—and in full possession of every inch of the ground upon which we stand and walk. But although the unaided eye cannot behold these wonders, the ingenuity of man has enabled us, with the assistance of the microscope, to discover this new world with its overwhelming multitudes of living beings.

BACTERIA.

The minuteness of these living creatures, or micro-organisms as we now generally term them, is so excessive, that their dimensions baffle description in the ordinary terms of measurement. Thus, without going by any means to the smallest known forms, we find as a common length of such organisms $\frac{1}{100000}$ of an inch, a figure which obviously conveys no definite impression with it. Perhaps it may assist comprehension to know that no less than 400 millions of these organisms could be spread over one square inch in a single layer. Thus we could have a population 100 times as great as that of London settled on an area of a single square inch, giving to each individual organism, not three acres, which is supposed to be necessary for the individual man, but $\frac{1}{100000}$ of a square inch, which is quite adequate for a citizen in the commonwealth of the micro-organisms. The shape of these micro-organisms is generally very simple; thus some are merely more or less spherical granules, to which we give the name of *micrococci*. Others again, from their rod-like shape, are known as *bacilli*, whilst others having a cork-screw or spiral form are known as *spirilla*. All these various forms are sometimes loosely spoken of as *bacteria*.

YEASTS AND MOULDS.

In addition to these bacterial forms, there are two other classes of micro-organisms—the *saccharomycetes*, or yeasts, and the moulds. The yeasts are comparatively large oval bodies, whilst the moulds consist of long threads, which give rise to well-known hairy patches which we are all so familiar with on articles of food, such as jam, bread, and meat, which have been unduly exposed to air and moisture.

Of these variously shaped micro-organisms, only the *bacilli* and *spirilla* are motile, whilst the *micrococci*, yeasts and moulds are stationary, as are also many of the *baccilli* themselves. The movements executed by the motile *bacilli* and *spirilla* form one of the most fascinating and entertaining microscopic spectacles that exists. The rapid motion of the countless swarms of individuals following their sinuous paths across the field of the microscope in all directions, and in the three dimensions of space, much after the fashion of a cloud of midges playing in the sunshine, produces an irresistible impression upon the observer that each individ-

*The Sanitary Record, vol. II, p. 451.

nal microbe is assisting in and conscientiously performing its part in a highly complex and thoroughly organized polonaise, conducted at express speed.

The process of reproduction amongst these micro-organisms is generally a very simple one. Thus the spherical micrococci merely become constricted by a waist, which, becoming narrower and narrower, results in the formation of two distinct bodies from one. The multiplication in the case of the bacilli is perfectly similar, the division taking place transversely to their length. In many cases, however, the bacilli are capable of another and highly important mode of multiplication. In the interior of the bacillus there appears a round or oval body, having a very bright and shining luster. This bead-like body is known as a *spore*, and plays a most important part in the propagation of many kinds of bacilli, for just as the seed is much more enduring than the plant from which it is derived, so these spores are capable of resisting many hardships which would be immediately fatal to the parent bacilli from which they have sprung. Thus these spores will endure the severest privations both of hunger and thirst; they are unaffected by cold far greater than that of an Arctic winter, and will sometimes survive a few minutes' exposure to boiling water; in fact, such spores are the hardiest forms of living matter which science has yet revealed.

Although it has been reserved for us in comparatively recent years to become acquainted with the size, form and habit of these micro-organisms, yet these micro-organisms and their works have been known from time immemorial, for when aggregated together in overwhelming numbers, they give rise to appearances and produce effects which even the most casual observer, long before microscopes were invented, must have taken note of.

BACILLUS PRODIGIOSUS.

Passing over the larger micro-organisms, the moulds, with which every child is acquainted, I would call your attention to a small micro-organism, a bacillus, not more than $\frac{1}{20000}$ of an inch in length, and which, notwithstanding its minuteness and insignificance *per se*, can yet, when growing on suitable nourishing material, by combining the efforts of countless myriads, give rise to a pigment of an intensely blood-red color. This organism, which we now know by the name of *bacillus prodigiosus*, has in the past doubtless been the cause of phenomena which at the time were regarded as being produced by a supernatural agency, for this bacillus prodigiosus finds a convenient soil for its growth and multiplication on bread and other farinaceous articles of food. Thus it has not infrequently taken up its abode on the sacred wafer, and by there producing this marvelous color has given rise to the appearance of the bleeding host, which frequently figures in mediæval legends. Far more important, however, than the manifestations of color to which some micro-organisms are capable of giving rise, are the works of utility upon which many other varieties are continually engaged, without rest day and night, and upon the fruit of which labors man is deeply dependent.

The essential work in the brewery, in the distillery, in the wine vat, in the cider cask, and even in the ginger beer bottle, is carried on by laboring micro-organisms, whose particular handicraft consists in the production of alcohol. The artisans possessing this special skill belong to the yeast class. Although each individual laborer is by himself but an insignificant object, yet by combination they acquire sufficient power to produce the most startling effects. Thus it is by the united efforts of vast numbers of these yeast organisms that the liquid in the fermenting-vat of the brewery boils up in great masses of froth and foam; it is by their energy that the champagne cork is discharged with the violence of a pistol-shot, while the

much-prized alcohol which results from their labors constitutes one of the most important sources of revenue in this country.

But whilst one gang of microbes is laboring for man in the production of alcohol, another is engaged in further elaborating this alcohol into vinegar. The artisans skilled in this particular craft are much more minute than those which produce the alcohol; they are small bacilli, not more than one-twenty thousandth of an inch in length. It has, however, been recently found that vinegar can be more economically produced without the services of these organisms, viz.: by distilling wood in the same way that coal is distilled in the manufacture of gas, and doubtless this artificial vinegar will more and more take the place of the fermentation vinegar.

Other microbes, again, are employed by the baker to make his bread rise; these microbes also enjoyed a monopoly until the Aërated Bread Company introduced the mechanical process of raising the dough.

PUTREFACTION AND DECAY.

I could mention a large number of other works which are dependent upon the life of micro-organisms, but I will confine myself to mentioning perhaps the most important of all the changes which they are capable of effecting. I refer to the conversion of refuse organic matter, both animal and vegetable, into mineral water. The well-known phenomena of putrefaction and decay to which all refuse vegetable and animal matter is subject, are known to be entirely due to the action of various micro-organisms, and if due precautions be taken to exclude these micro-organisms, vegetable and animal substances are found to be almost quite permanent.

Therefore, but for the agency of these micro-organisms, the surface of the globe would be covered with the remains of plants and animals undergoing but little more change than the stones and other mineral ingredients of which the earth's crust is composed. But under these circumstances life, as we now know it upon the surface of this planet, would soon come to an end, for it is by the decomposition of refuse animal and vegetable matter in the ground that the fertility of the soil is maintained; and in the absence of this decomposition, which, as I have said, can only be effected by the agency of micro-organisms, the most fertile land would soon become a barren waste incapable of supporting plant-life, and upon the extinction of the latter, the cessation of animal life would rapidly follow as a necessary consequence.

Thus whilst the animal is directly dependent upon the vegetable kingdom, the latter is directly dependent for its food upon the products elaborated by micro-organisms from refuse animal and vegetable matters; and if one link, although at first sight perhaps the least important one in the chain, be broken, the whole mechanism, with its wonderful cycle of changes, must necessarily collapse.

The properties of micro-organisms which we have hitherto considered have been harmless or even beneficial to man. There are, however, a number of varieties of microbes, whose behavior is anything but amiable, and whose dangerous character has brought such discredit upon the entire class of micro-organisms that the virtues of some are often overlooked, and their usefulness forgotten, owing to the terror and dismay which their harmful brethren inspire; for, as is well known, some of these minute forms of life exist also as parasites on the higher organisms, including man himself. Of these higher organisms they frequently cause degeneration and death, producing the severest diseases amongst animals, high and low, and threatening mankind with the most murderous plagues and epidemics.

PATHOGENIC MICRO-ORGANISMS.

The micro-organisms which are capable of producing disease are generally known as *pathogenic* ones, whilst the diseases to which they give rise are termed *zymotic*

diseases, in consequence of their course presenting more or less resemblance to a process of fermentation. Thus the manner in which infectious diseases are communicated, the continuous propagation of infectious principle through a long series of individuals, the occasional transportation of the infection to long distances—again, the period of incubation, and the typical manner in which these diseases run their course, are all circumstances which have long and irresistibly impressed observers with the organized nature of the exciting cause. In fact, although we are firmly convinced that all the zymotic diseases, such as cholera, scarlet fever, typhoid fever, measles, small-pox, diphtheria, hydrophobia, etc., are due to the presence of micro-organisms, yet it is in only comparatively few cases that particular micro-organisms have been conclusively proved to be the cause of a particular disease.

BACILLUS ANTHRACIS.

The disease which of all others has been most thoroughly studied in this respect, is one of which we do not hear in London, but which is well known in Bradford as *wool-sorters' disease*, or malignant pustule, and which is much dreaded also by farmers, owing to the ravages which it makes among stock, the particular disease in cattle being known as *splenic fever*. This splenic fever in cattle, and wool-sorters' disease in man, are now known to be due to one and the same cause, viz., to the presence of an exceedingly beautiful but malignant organism termed the *bacillus anthracis*. These bacilli were first observed in the blood of animals which died of splenic fever in the year 1863, and it was this discovery which gave the first impulse to the careful study of the zymotic diseases which in recent years have yielded such abundant fruit in the hands of Pasteur, Koch, Lister, and others.

It will be of interest to examine a little more in detail how this disease, which may be taken as typical of zymotic diseases, is communicable from animal to animal.

If the blood taken from any part of an animal just died of anthrax be microscopically examined, it will be found to be teeming with these bacillar forms. Now if the smallest quantity of such blood is introduced into the tissues of another animal capable of taking the disease, the inoculated animal becomes infected, and almost certainly succumbs; and if now the blood of this second victim be similarly examined, this also would be found teeming with the same bacilli. We thus see that the disease is accompanied by the enormous multiplication of the micro-organisms within the system of the victim, and that the disease may be definitely communicated from one animal to another.

But we may also cause this bacillus to grow and multiply abundantly outside the animal system altogether, or, as we term it, cultivate the organism in an artificial medium. Thus, if we take on the point of a needle the minutest trace of the blood of an animal dead of splenic fever, and then introduce the point of the needle into any of the ordinary cultivating media, such as broth, gelatine, peptone, agar-agar, or blood-serum, we shall obtain in the course of a few days an abundant growth of the anthrax-bacillus, readily visible to the naked eye. I ought to mention that the appearance of the growths produced by micro-organisms on these artificial culture-media is often highly characteristic, and, by means of these naked-eye appearances, we can often differentiate between micro-organisms which under the microscope are indistinguishable.

Now, in these artificial culture-media the anthrax-bacillus develops those hardy, durable forms which, as I have already said, are known as spores, and with the appearance of these spores the capacity for doing harm is enormously increased, for, as I have already pointed out, these spores are highly indestructible, and are capable of retaining their vitality for practically an indefinite length of time. Now it is

this circumstance—that the anthrax-bacilli produce spores—which renders this disease so difficult of extermination. Thus, if the carcasses of animals dead of anthrax are buried or are allowed to decay upon the surface of the earth, the bacilli form spores in the soil, and healthy animals may thus become infected by taking in the spores with their food when grazing. Again, the skins of animals which have died of anthrax not infrequently pass into commerce, and often prove fatal to the tanners and wool-storers who handle them long afterwards.

From this it will be seen how necessary it is that the strictest supervision should be exercised whenever an outbreak of splenic fever takes place, and that the disposal, by cremation, of the carcasses of the affected animals should be most vigorously enforced. Unfortunately, those most closely concerned with this disease are only too often quite ignorant of its dangers. Thus during a recent outbreak of splenic fever in a rural district of England, the butcher to whom the slaughtering of the affected animals was intrusted was quite unaware of the dangerous task upon which he was engaged, and only had his ignorance enlightened by himself falling a victim to the disease.

ERYSIPELAS.

We will now turn to another disease which is far more common in man than anthrax, and is also caused by a micro-organism, in this case a micrococcus, not a bacillus. The micrococci of this disease—erysipelas—hang together in chains, and are hence known as *streptococci*. There can be no doubt that these organisms are the cause of the disease, for erysipelas has actually been produced in man by intentionally inoculating with these cultivations of the streptococcus. I should mention that these experiments upon human beings were performed not merely for the purpose of scientific inquiry, but also for the benefit of the persons inoculated, who were suffering from malignant tumors, which are sometimes alleviated by an attack of erysipelas. Owing to these experiments, therefore, we are able with confidence to affirm that this particular organism is not only capable of setting up erysipelas in animals, but also in man.

TUBERCULOSIS.

Undoubtedly the greatest and most remarkable piece of work which has ever been accomplished in connecting disease with the life of micro-organisms is the proof which has been furnished by Koch of the exciting cause of tuberculosis, one of the most familiar forms of which—pulmonary consumption—is the commonest disease in the world, and in this country the greatest enemy to human life, destroying as it does about one-fifth of our population, generally in the best and most active years of existence. This disease, we now know with absolute certainty, is caused by a minute bacillus which is invariably found in all the varieties of tuberculous disease.

By the most ingenious methods this bacillus has been cultivated in artificial media outside the body, and whenever reintroduced into the system of an animal it again produces the characteristic disease. To give an idea of the thoroughness and conscientious exactitude with which such researches are conducted, I may mention that Koch's investigation on tuberculosis was not given to the world until he had proved his points by experiments made on 273 guinea-pigs, 105 rabbits, 44 field-mice, 28 white mice, 19 rats, 13 cats, besides numerous dogs, fowls, pigeons and other animals. The exact manner in which this disease is communicated from one individual to another has not been actually ascertained, but when it is borne in mind that the sputum of consumptive patients contains the organism, and that the bacillus is known to produce spores, it is not difficult to understand that there must be very numerous channels by which the poison may be conveyed. It would appear, however, that the mere conveyance of the organism from one person to another is not

sufficient to induce the disease, but that more or less predisposition to the disease is also necessary. In the case of all zymotic diseases predisposition no doubt plays an important part in the process of infection, but in the case of tuberculosis this factor of predisposition appears to be of more than usual importance.

The possibility of this disease being communicated from the lower animals to man must also be borne in mind, for tuberculosis is comparatively common amongst cattle, and, as in so many other infectious diseases, milk must be viewed with suspicion as a particularly suitable medium for the conveyance of the zymotic poison.

There are, again, certain zymotic diseases more especially peculiar to the lower animals, in which the connection with specific micro-organism has been fully made out, as in the case of glanders, chicken-cholera, and swine-fever; but of more immediate importance to man is our acquaintance with the specific micro-organisms which induce the formation of abscesses and of suppuration generally, as well as of the organism causing the terrible phenomenon of lock-jaw or tetanus. These are the micro-organisms which have to be more especially taken into consideration in the practice of surgery, for it is to the presence of these organisms, far more than to anything else, that the dangers as well as the sufferings consequent on surgical operations are due.

ANTISEPTIC TREATMENT OF WOUNDS.

In consequence of our more intimate acquaintance with these microbes capable of setting up suppuration, and knowing as we now do how they may be destroyed by the action of a number of chemical agents, completely new precautions have been introduced into the practice of surgery with a view to destroying the microbes which may gain access to wounds, and thus preventing the evil effects which result from their presence. This new departure in the practice of surgery is known as the *antiseptic treatment of wounds*, and Englishmen may be justly proud that this most important step toward getting the mastery over disease is due to Sir Joseph Lister, whose great discovery has been of the most priceless value in alleviating the sufferings of humanity in every quarter of the globe. Two of the principal substances employed in the antiseptic treatment of wounds are corrosive sublimate and carbolic acid, whilst many others have from time to time been used to a less extent. In applying these antiseptics it is necessary, of course, that they should be employed of such strength that, without poisoning the patient, they are still sufficiently strong to poison the microbes. Of all these substances, the most powerful as an antiseptic or germicide is corrosive sublimate; but it is, unfortunately, also extremely poisonous to man. In a sufficiently dilute state, however, it is largely used for a number of antiseptic purposes.

When we come to inquire how it is that some of these minute organisms are capable of producing these disastrous effects upon the animals in which they grow and multiply, we find that the virulent symptoms to which they give rise are not, in all probability, due to the mere presence of these living particles as such, but to the fact that they elaborate, within the tissues of the body, certain chemical substances of a highly poisonous nature, and that these poisons, and not the microbes themselves, are the real cause of the mischief. These poisonous chemical substances may be elaborated by microbes when growing in artificial culture outside the body; thus, when meat and other albuminous substances begin to undergo decomposition they are frequently possessed of most intensely poisonous properties. Everyone is familiar with those remarkable instances, of which we frequently read in papers, of a whole family being poisoned by partaking of some particular dish of meat, fish, or the like. Now such cases are nearly invariable due to the food in question having been in an unsound condition; before being cooked, this food has harbored certain micro-organisms which have produced these particular chemical substances,

and whilst the microbes have been destroyed in cooking, the poisonous character of these elaborated chemical substances has remained unchanged by the process.

PTOMAINES.

Several of these microbial poisons, or *ptomaines*, as we call them, owing to the presence of such substances having been first discovered in decomposing corpses, have already been isolated and obtained in a pure state; thus a substance which is produced by the tetanus-bacillus has been separated out from the culture materials in which this organism has grown, and this substance, on being introduced into animals, rapidly produces the same characteristic symptoms which are produced when the tetanus-bacillus itself is inoculated, and has had time to multiply in the system and produce this particular poison.

It now remains to consider our relationship to those micro-organisms with which we are constantly surrounded, both in the air we breathe and in the water we drink.

The modern methods of research enable us not only to ascertain the nature of the various micro-organisms existing in air and water, but also to estimate, with a fair degree of accuracy, the actual numbers in which they are present in these media.

MICRO-ORGANISMS IN THE ATMOSPHERE.

Without entering into a description of the methods employed, a detailed account of which will be found summed up in a lecture which I recently gave at the Society of Arts,* I will briefly enumerate some of the more important results which I have obtained in the course of a systematic investigation of the aerial microbia. When the subject first attracted the attention of experimenters, it was very generally supposed that these micro-organisms were present everywhere and at all times in immense numbers, and that in fact it was absolutely impossible to elude them. This, however, has been shown to be by no means the case. If we go to the top of a high mountain, or if we ascend even the spires of some of our cathedrals, we shall find that they are present in exceedingly small numbers. Thus in two gallons of air examined on the top of Norwich Cathedral spire, a height of about 300 feet, we obtain only seven. In the lower regions of the atmosphere, and as we gradually approach the earth's surface—where of course the air is more or less laden with dust—we find, on the contrary, an increasing number in the same volume of air. Thus on the same day, at the base of the cathedral, eighteen were found. These results have been confirmed by numerous other experiments made on St. Paul's and elsewhere. It is further found that the microbial population of the air is enormously increased by any circumstances tending to disseminate dust, *e. g.*, by the aggregation of a large number of people in a confined space. Thus in two gallons of air examined in the large hall of the Natural History Museum on an ordinary week-day there were found fifty; but on a Whit Monday, when crowds were visiting the building, as many as 280 micro-organisms were discovered in the same volume.

The tendency which these minute living particles have to subside in the absence of aerial disturbance, and the extreme ease with which they can again become suspended in the air, teaches us what great care should be taken in the sick-room to avoid the stirring-up of dust, for it is in consequence of the universal presence of these microbes, and the facility with which they can gain access to wounds, that the danger of surgical operations becomes so great.

In the summer months micro-organisms are more abundant than in the colder weather. I have found that, starting from four in the standard two gallons of air in January, they rose to as many as 105 in August, and then gradually fell as the

*"Some of the Conditions Affecting the Distribution of Micro-Organisms in the Atmosphere."—*Journal of the Society of Arts*, No. 1792, Vol. XXXV, 1887.

winter approached. Many other interesting experiments might be cited showing the effect of external conditions on the prevalence of aerial microbes, but I must now pass on to a brief account of the circumstances which regulate their presence in water.

MICRO-ORGANISMS IN WATER.

In the first place, we find that different kinds of waters possess them in very different numbers. Thus the river Thames, in its raw condition, before undergoing any treatment at the hands of the water companies, has on the average, taken throughout an entire year, as many as 20,000 micro-organisms in one cubic centimetre of water, which is equal to about twenty drops. The same water, after it has been in the hands of the water companies, and there submitted to storage and filtration, contains on delivery from the mains in the same number of drops an average of only four hundred.

It was formerly supposed that the sand filtration, as practiced by the companies, was of little if any use; but these experiments show that sand filtration forms a very material protective measure against our infection by water-carried microbes. In the deep-well water derived from the chalk it is usual to find only a very few micro-organisms. Thus in the water obtained direct from the wells sunk into the chalk by the Kent Company, I have found an average of eighteen. If this result, which it must be remembered has been obtained from water which has undergone no *artificial* filtration, but is the raw and untreated water as we find it, be contrasted with that mentioned above, viz., 20,000, which is the average for river-water, it is at once apparent what an enormous difference there is in the microbial condition of these waters.

In order, however, to render our safety from such organisms practically absolute, it is only necessary to have our drinking-water boiled. Many persons have a prejudice against boiled water, in consequence of its flat, insipid taste; but these undoubted defects may be easily remedied by passing the boiled water when cold through any ordinary household filter, which will impart to the water its original freshness and palatability.

In fact, nearly all the terror which micro-organisms are justly capable of inspiring melts away when we remember that we can effectively combat them by heat. Thus milk and water, each of which if infected with hurtful microbes is capable of doing so much mischief to mankind, can be rendered practically safe by merely subjecting them to the process of boiling. Indeed, it cannot be widely enough known that perhaps the most effective private measures which can be taken in avoiding zymotic disease consist in boiling all our milk and all our drinking-water. By insisting upon these simple operations being systematically carried out, every family can render itself independent of the purity of our public milk and water supplies, the safety and wholesomeness of which it is altogether beyond the power of the private individual to control.

I trust that the preceding short sketch of the life and habits of some of these micro-organisms will not have resulted in exciting any unnecessary alarm. I know that some people, and unfortunately a large number, feel that it is very undesirable to have any knowledge of such hidden dangers; that, in fact, "where ignorance is bliss 'tis folly to be wise." I need hardly to say that this proverb is utterly repugnant to all who have the progress of science at heart, for the true man of science prefers to have truth above everything else, and is at all times ready to sacrifice the pleasure and to endure the pain which its attainment may entail. But there is another proverb, "Knowledge is power," which is, I venture to think, far more applicable to the case of these micro-organisms; for by acquiring an accurate knowl-

edge of their habits of life we become endowed with the power to defeat the attacks of the injurious and malevolent as well as to avail ourselves of the labors of the useful, so as to guide their energies in the service of, and for the benefit of, mankind.

SUPPLEMENT

TO THE

REPORT OF KANSAS STATE BOARD OF HEALTH, 1888.

STATE SANITARY CONVENTION.

Proceedings, Addresses and Discussions at the Third State Sanitary Convention, held at Emporia, Kas., Dec. 5-6, 1888.

(This report of the Convention is prepared from papers furnished by the authors, from accounts of the Convention printed in the Emporia and Topeka papers, and from notes by Dr. Redden, Secretary of the Convention.)

This convention was held under the auspices of the State Board of Health, arrangements having been made by a local committee of the citizens of Emporia, acting with a committee of the State Board of Health. The following were the local committees:

Committee on Entertainment—Rev. F. S. Milliken, Chairman; President O. W. Miller, F. B. Sherbourne, M.D., and G. W. Frost, M.D.

Committee of Arrangements—President A. R. Taylor, Chairman; J. J. Wright, M.D., G. A. Biddle, M.D., and Supt. J. E. Klock.

Committee from the State Board of Health—G. H. T. Johnson, M.D., of Atchison; D. C. Jones, M.D., of Topeka; D. Surber, M.D., of Perry, and J. W. Redden, M.D., of Topeka.

The following-named gentlemen were elected as officers of the Convention:

President—Hon. John K. Wright.

Vice-Presidents—Gen. H. K. McConnell, Osage City; Hon. H. S. Kelsey, Atchison; Prof. Chittenden Rector, Salina; Hon. E. G. Dewey, Grenola; F. B. Sherbourne, M.D., Emporia; Hon. H. W. Spangler, Perry.

Secretaries—J. W. Redden, M.D., Topeka; Elder A. M. Harvout, Emporia.

Among those present were:

Hon. John K. Wright, of Junction City; F. B. Sherbourne, M.D., of Emporia; Hon. H. W. Spangler, of Perry; Rev. J. F. Sauerber, of Emporia; Rev. J. F. Hendy, D.D., of Emporia; G. H. T. Johnson, M.D., of Atchison; T. H. Dinsmore, Ph.D., of Emporia; W. D. Bidwell, M.D., of Leavenworth; Prof. W. C. Stevens, of Emporia; D. Surber, M.D., of Perry; Robert King, M.D., of Emporia; J. Milton Welch, M.D., of Wichita; D. C. Jones, M.D., of Topeka; L. D. Jacobs, M.D., of Emporia; Charles Gardiner, M.D., of Emporia; W. L. Schenck, M.D., of Osage City; J. W. Redden, M.D., of Topeka; Mrs. F. M. W. Jackson, M.D., of Emporia; Hon. L. B. Kellogg, of Emporia; Rev. F. S. Milliken, of Emporia; President O. W. Miller, of Emporia; G. W. Frost, M.D., of Emporia; President A. R. Taylor, of Emporia; J. J. Wright, M.D., of Emporia; G. A. Biddle, M.D., of Emporia; Superintendent J. E. Klock, of

Emporia; J. F. Drake, Esq., of Emporia; Prof. Sayre, of Lawrence; and Dr. Brown, of Leavenworth.

Many of the prominent citizens of Emporia, both ladies and gentlemen, the professors of the State Normal School, and the students, attended the various sessions of this convention, and took a deep interest in the proceedings.

FIRST SESSION.

EMPORIA, December 5, 1888—7:30 P. M.

The third annual State Sanitary Convention convened at the Assembly Hall, State Normal School building, and was called to order by the Hon. John K. Wright, President of the convention. He expressed to the convention his thanks for the honor they had conferred on him, and hoped all those in attendance would feel free to take part in the discussion of any of the papers that might be presented for their consideration, and he felt confident that all would be well repaid for the time given to the sessions of the convention, and that great good would result to the people of the State from the deliberations and proceedings of this sanitary convention.

Prayer was then offered by the Rev. J. F. Sauerber, of Emporia.

Rev. J. F. Hendy, D. D., of Emporia, then delivered the following address of welcome:

Mr. President, and Gentlemen of the State Sanitary Convention: The pleasing duty has been assigned me of tendering you a most cordial welcome to our fair young city.

I am confident that I speak the mind of all our intelligent citizens when I say that we feel highly honored in having our city selected as the place of meeting for your honorable body. I am quite sure that you will form the acquaintance of a goodly number of our people in thorough sympathy with the beneficent objects that summon you hither. I am equally sure that your learned and intelligent discussions will find in this community highly appreciative auditors.

Our people, in various ways, have manifested their deep interest in questions pertaining to social, moral, and educational problems. We flatter ourselves that in that great department of practical science which seeks to guard and promote the health of cities and communities as well as individuals, we shall be found in the front rank, ever cheering forward by word and act all zealous laborers in this beneficent endeavor.

The principal aim of sanitary science, as I understand it, is, *to preserve life and health by proper precautionary arrangements.* We are reliably informed that in the mother country of England the annual average of deaths from diseases is about 500,000, while the number of deaths arising from mere wearing-out is less than one-tenth of that number. In the difference of those two numbers, you, gentlemen of the sanitary association, find your field of work. The field is both vast and vital.

I do not suppose that the most sanguine of you ever expect to see disease entirely eradicated; but as each disease has its specific and efficient cause—a cause, too, that may be removed or at least greatly modified in its action, I presume you are looking forward to the time when the number that die early of disease shall be greatly

lessened, and the number that vigorously round out the fourscore years shall be greatly increased. It is well for us all to bear in mind that the object of the intelligent sanitary reformer, after all, is not so much the *extension* of the natural period of human life, as it is to remove all those influences which artificially *curtail* life. When a green old age has been successfully reached, the journey may well be considered as complete, and the tired body may peacefully part with the spirit. Death in all such cases is felt to be a natural and fitting change; it creates no violent chasm in the family or in society. But it is not so when the opening bud is blighted, or the manly life in all its vigorous bloom is cut off. These are the sad events that crowd human existence with spots of desolation, that turn the smiling garden into a howling wilderness.

The beneficent purpose of your science, gentlemen, is at least to investigate these calamities of mortality, and before such a purpose as yours, all sarcasm, faction and selfishness are at once disarmed. All great progressive nations give a prominent place to sanitary science. Indeed, one of the concomitants of an enlightened civilization is a sanitary commission, reinforced by a sanitary police. Intelligent, well-weighed legislation is a powerful promoter of sanitary reform. With the Jews, sanitary regulations were a part of their religion; these regulations exist with many of the oriental nations to this day. Roman legislation in regard to sanitary matters was the most sagacious and extensive of which we have any knowledge. As for the Romans, nothing that could either protect or promote the public health was deemed in any sense common or unclean. Indeed from the very founding of their city onward to its highest development of power, their rule was that no building should be allowed to take shape if it might become a harbor for either disease or crime. Beyond all question it was this vigilant forethought that contributed so largely to the preservation of the social order itself, when the population of the imperial city became so dense and vast. The fame of the great Roman consul, Appius Claudius, rests not alone upon his political sagacity and statesmanship: he was quite as clear-sighted in his administration and sanitary measures as in his purely political schemes. If the construction of the Appian Way gave him just renown, the building of the famous Appian Aqueduct widely extended his good reputation. It is to his everlasting credit that the poor families of Rome obtained through his agency an abundance of fresh, pure water, thus contributing effectively to both health and cleanliness.

The statesmanship of the present day will make no mistake if it follows in the footsteps of Appius Claudius, in this one respect at least. Pure water, in ample supply, is one of the imperative needs in all the young and prosperous cities of Kansas to-day.

Your program, gentlemen, is one of great interest and suggestiveness. I am confident that fresh and able contributions to sanitary science will be made by the members of this convention, at its present session.

We again tender you a most cordial welcome to Emporia, trusting that in the future you may be able to carry with you many pleasing memories of the days you now spend with us.

Hon. J. K. Wright, President of the convention, made a brief response, referring to the object and purposes of the convention, and urged upon the citizens of Emporia, and the students of the State Normal School, the importance of using their influence in disseminating among the people of the State the truths and instructions that will here be presented, in order that the people may understand and appreciate the great blessings that they

will enjoy in carrying out the important lessons and instructions contained in the various papers that will be presented at the various sessions of this important sanitary convention.

Dr. G. H. T. Johnson, M. D., presented the following paper:

STATEMENT OF THE OBJECT OF THE CONVENTION.

BY G. H. T. JOHNSON, M. D., ATCHISON, PRESIDENT OF THE STATE BOARD OF HEALTH.

Mr. President, Ladies and Gentlemen: A dictum of Pythagoras was: "Hold your tongue or say something better than silence." Had I consulted my own feelings on this occasion, I should have taken this advice of the Greek philosopher, and, wisely perhaps, remained silent. There is, however, much that might be said in explaining the object of this sanitary convention—so much, in fact, that the question of where to begin and when to end is an important one.

It is said that as Newton was about to finish his calculations respecting the moon's distance, the consequences of which have been so tremendous, as his figures began to show that the result would correspond with and sustain his great theory, the pencil fell from his nervous hand and he fled, leaving the work to a friend. In like manner the sanitarian is almost afraid to look ahead; the possibilities in the field he labors in are so immense, so freighted with good to the race, that he is dazed and startled by their magnitude. On investigation he finds that of the one million people who die annually in the United States, almost one-third if not more die from preventable diseases—an unnecessary if not a wicked waste of human life. This annual sacrifice includes as many lives as were offered up in the cause of liberty, on the altar of our country in the four years' war for the Union. Further investigation shows that as a matter of statistics twenty-five persons are sick on an average nine days for every person that dies, and that sickness wastes more than death; that the annual losses of our people from preventable disease and death cannot, with any degree of accuracy, be estimated, but it certainly amounts to at least \$300,000,000. In this loss in dollars no estimate is made of the physical pain, the mental anguish, the wrecked intellects, the hopeless maniacs, the helpless orphans, the world of woe and suffering that are the sad results of preventable disease, which, when it permits its victims to escape with their lives, too often leaves their health permanently impaired. Health has been called the wage-earner's capital. If he loses a day's work he loses the interest on his capital. A permanent impairment of health means a total loss of capital.

Without at present taking a wider survey of the field in which the sanitarians labor, and the work sought to be accomplished by them and by this sanitary convention, let me ask why it is that there is such an utter indifference to the public health interest on the part of the masses of the people. It is doubtless due to the fact that as a rule the ordinary individual lives in a world of his own, and rarely attempts to penetrate with his restricted vision beyond its horizon. When the facts of the sanitarian are shot at him, he shrugs his shoulders and cries, "Crank! crank!" and retires into the oblivion of the little world of his creation. But let yellow fever break out near him and he is intensely interested, if not panic-stricken, and runs away from the threatened danger if he can escape the "shot-gun quarantine." Yet the fact that typhoid and malarious fevers destroy 36,000 lives annually does not create a ripple of excitement in his make-up. It takes something of a startling nature to arouse interest in the masses. That in this country annually 60,000 lives are numbered among the victims of diphtheria, measles, scarlatina, small-pox and whooping-cough, and that consumption claims 60,000 more; that diarrhea and dysentery carry off 50,000; and other preventable diseases as many more, has less

of interest to the ordinary mortal than the contemplation of a possible invasion of cholera, which may never come, and if it should, would doubtless result in less loss of life than any of these diseases. One of the objects of this convention is to convince the people of the great importance of guarding against these menacing diseases that are carrying off our people by the hundreds of thousands, and to teach them that these are largely, if not wholly, preventable under wise sanitation.

Lord Derby twenty years ago declared that "No sanitary improvement worth the name will be effective unless you can create an intelligent interest in the matter among the people at large." To create this intelligent interest among our people is especially the work of this and similar conventions. The best safeguard against disease is an educated people. In the homes of the mothers of this land is to be fought the great sanitary battle of the present and the future. Whether they shall send their children into the world well equipped for life's battle, or shall bury them in premature graves, depends upon the good or bad sanitary regulations of the homes. This saving of the children is the great—the all-important—work of the sanitarian. When we make our earnest plea for the lives of these dear little ones, we sometimes have flaunted in our faces the heartless doctrine of "the survival of the fittest." This is a cruel and cold-blooded proposition, which contemplates the sacrifice of the lives of the helpless, the weak and unfortunate, without making an intelligent effort to save them. As almost one-half of the children born into the world die before they reach the age of ten years, who shall say of this great multitude which is the fittest to survive? Who shall distinguish between the possible Lincolns and the possible tramps; between the possible Grants and Sheridans, and the possible anarchists and communists?

As the tender sympathies of the true mother's heart go out most freely to the sickly, the weakly or unfortunate child of the family, so should all the skill of the physician and the best efforts of the scientist and sanitarian be directed to the making the least fitted of all the human family well fitted to live. The Greeks buried their young children by night only, counting it a shame too great for the sun to see that any should fail of complete existence. Can we rightly boast of an intelligence and civilization superior to that of the Greeks, when the lives of two-thirds of all the children under fifteen years of age who die, might be and ought to be saved under better sanitation?

We suffer annually a loss of 100,000 of these little ones without manifesting the feeling of shame which the Greeks exhibited over similar losses. Are there present on this occasion any who have experienced a feeling of regret that they did not live in an age when the opportunities were favorable for the performance of some heroic act which would greatly benefit their race, and by which they could achieve immortality for themselves? who may have felt that it was a personal misfortune that they were born too late to take an active part in the heroic struggle for liberty and union in the days of '61 and '65? If so, learn now that the greatest possible opportunities for good to your race and to achieve imperishable immortality to yourselves await your action; for what greater and more beneficent work could you engage in than that of saving the lives of hundreds of thousands of your fellow-men who are annually sacrificed to preventable diseases? This is, as I understand it, the work of this sanitary convention; and in the performance of this great work we must first plan to save the children—for here it is where the greatest loss of prospective valuable lives takes place. Yet our field of action takes in all mankind, and is not confined to this generation, but reaches those to come. For if by our efforts we shall make this generation stronger, better and purer, and lift the masses to a higher plane of health, happiness and longevity, this gain will be transmitted to all who come after us; and

the good work begun by us shall be so far-reaching in its beneficent effects, that it shall not cease until long after the monumental piles which may mark our last resting place shall disappear from mental vision.

Professor Dinsmore, of Emporia, then presented the following paper:

DIFFUSION OF POISONOUS GASES.

BY T. H. DINSMORE, PH.D., OF THE STATE NORMAL SCHOOL.

The human body receives its chief life-giving elements from the air which enters the lungs during the process of respiration. The oxygen of the atmosphere combines with the blood both chemically and mechanically, and is conveyed rapidly to every part of the system for the nourishment and rebuilding of the working tissues. When from any cause the air either loses a part of its oxygen or becomes impure by the absorption of unwholesome or poisonous gases, the tissues not only fail to receive the needed nourishment, but in many cases suffer serious injury from the poisonous compounds. The most common substances which thus exist as foes to the system are—(1) exhaled animal matter, always abundant in crowded halls; (2) offensive gases and odors, which emanate from the sick; (3) illuminating gas, escaping from defective pipes; (4) ammonia, from decayed vegetable matter; and (5) sewer-gas, which unfortunately lurks about almost every home. These poisonous gases are readily absorbed by both liquids and all porous substances. All scientific workers know that gases are highly diffusive, but few realize that our homes offer scarcely any protection against these insidious agents of death. They pass with the utmost ease not only through loosely-jointed doors and windows, but even solid walls. This may be illustrated by observing here a section of brick wall, thicker than usual, and constructed with great care. It is composed of the soft, compact brick of which our dwellings are constructed. Four of the six surfaces are covered with wood, the other two with beeswax. Two funnels placed against the solid brick are held in position on opposite sides by wooden clamps; as I now connect this with a jet of common illuminating gas, you see it works its way through the said wall and burns upon the opposite side within fifteen seconds. Such is the action when confined sewer-gas reaches the porous earth and foundation-walls of our homes. It sweeps into the cellar and through the rooms, and holds possession with pestilential breath until it breeds typhoid fever, which in turn develops foul odors which attack wearied frames and greatly assist in increasing the list of the many victims who now sleep in the silent city.

But it may be said, and with reason, too, that the gas which penetrates the brick wall is under a slight pressure, which if removed would then fail to make its way through the structure. We, however, again show by means of this second apparatus that the diffusion does take place very rapidly without pressure. When we consider that the doors even of sick-rooms are not air-tight, and in addition are frequently left open, it may be seen how readily these poisons find their way to all parts of the house. Then, again, we cannot too strongly condemn the indiscretion of the good housewife, who, with commendable care, would save the remnant of a meal for future use. She does not realize that as the sponge absorbs water so do the stewed tomatoes, turnips, onions, cabbage, baked apples, and like substances absorb poisonous gases. In many cases they are placed in cellars reeking with foul gases from decaying fruits, cabbage, and apples, or left in close closets to remain for hours beside stale food or a mass of half-decayed butter, which, in spite of a most offensive odor, is still supposed to be good for cooking purposes.

What wonder is it that such food, after being returned to the table, should cause the consumer to turn with loathing from the first taste, or that after being swal-

lowed it should distress the stomach, or that after being partly digested, the blood poisoned by it should surge madly through the system, generating fever or inducing frightful dreams. Better, far better, is it for the faithful mother to cook a smaller quantity, or preserve the remainder in the purest atmosphere.

The best and simplest remedy for poisonous gases is warm, dry charcoal, one cubic foot of which will absorb one hundred times its volume of sewer gas, and speedily render the air, even in a sick-room, pure and wholesome.

This paper was beautifully illustrated by the Professor, and was both instructive and interesting. It was very ably discussed by Dr. Brown, of Leavenworth, Rev. Mr. Sauerber, of Emporia, Rev. Mr. Milliken, Dr. Gardiner and Professor Dinsmore, of Emporia. Each speaker presented very profitable and edifying remarks, bearing upon the theme of the paper.

The next paper was presented by Dr. W. D. Bidwell, of Leavenworth, as follows:

THE POLLUTION OF DRINKING-WATER.

BY W. D. BIDWELL, A.M., M.D., SECRETARY LEAVENWORTH CITY BOARD OF HEALTH.

We, as physicians, are occasionally informed by business-men, and members of the other learned professions, that it is lamentable we should be so much behind the rest of the world, and they endeavor to make it appear that Æsculapius, Hippocrates, Galen and Celsus were a trifle more advanced than we of the nineteenth century.

I have noticed this more particularly in the case of dyspeptics who have been unable to find a doctor clever enough to write a prescription that would cure them of their dyspepsia, while at the same time allowing them to drink whisky on an empty stomach, bolt their meals, and eat rich lunches at 11 p.m., just before retiring. But when recently I saw nine columns, in a leading medical journal, devoted to an argument on "The Biological Cell." I came to the conclusion that we have advanced too fast for my dyspeptic friend and his hundred thousand brethren in this country. I do not mean that we have too much knowledge: perish the thought! But that the laity, the people, as distinguished from the sanitarians and scientists generally, are too far behind the present state of hygienic knowledge for their own good, and too far behind to appreciate the advanced work which is now going on.

At this convention are to be read papers of scientific interest—papers which will be a guide to advanced sanitary engineers; but the greatest benefit that can accrue from such a gathering is to have a large number of the citizens of Kansas learn and adopt some of the methods described to lessen sickness and suffering and increase the sum total of human happiness and comfort. It is of no avail that we discover means of perpetuating a "*mens sana in corpore sano*," unless we induce our neighbors to use these means.

Then, again, sanitation implies philanthropy, and this trait is usually so concealed in business transactions, or apparently assumed from some selfish motive, that a double duty devolves upon the sanitarian; first, to show the advantages of his measures and methods, and secondly, to persuade the dear people that he is not engineering some scheme solely for his personal advancement. Now in the matter of water supply for a family or community, he who can show an economical method of providing a fairly abundant supply of passably clear water has the public ear; and any attempt to secure the purchase of a filter or to have the water brought from a purer source, at even the slightest increased expense, is attributed to a desire to get a finger into the public purse. But the past few years have witnessed several instances of sickness, death, and great financial loss, due wholly to an im-

pure water supply, and as a result the public are more heedful of this subject than of many other sanitary matters, and it is quite possible that by the discussion for which this paper merely serves as a text, and by those papers on certain local water supplies, to be read here, some amelioration may be brought about in the quality of the water furnished to our communities.

In speaking of the pollution of drinking-water, we will consider river supply, wells, natural basins or reservoirs receiving the rainfall of a district, cisterns, and springs. Where subsoil water is collected by drainage pipes, it is subject to the same sources of contamination as a well, and for all practical purposes may be considered as well-water. Many sources of pollution exist, of which all are cognizable, such as unclean receptacles and the exposure in open vessels to noxious gases, dust and the more palpable impurities occasionally found in one's glass at a hotel; but before the sparkling beverage has been dipped from the mossy spring or pumped from the swiftly-flowing stream, or presented to the lips of the thirsty wayfarer by the old oaken bucket in the shade of some majestic elm hard by the old red New England farm-house, before the Mexican Ganyমেদে supplies you with a modicum from his earthen jar in return for your centave, it has run the gauntlet of a large number of impurities, and more fortunate is he who can always command a glass of *pure water* than the owner of a brewery. Now by that association of ideas which is the basis of Professor Loissette's method, the word "brewery" reminds me that the citizen of Leavenworth who wishes to visit a brewery must first cross the Missouri river; but before landing on the eastern bank, we will take a look at the rivers in this part of the country.

An Eastern man coming West for the first time, meets with a great disappointment when the "Father of Waters" first meets his gaze. He is aware of the extensive region drained by the Mississippi, and expecting something grand, can scarcely conceal his surprise even on that huge structure, the St. Louis bridge, but exclaims in disgust, "Is that dirty stream the Mississippi river?"

I shall never forget my first experience with St. Louis water. I reached the city one hot summer evening, and being worn out with the heat and dust of travel, took a room at the Southern Hotel, with bath-room attached. I filled the tub at once and let it run out, thinking that I was flushing an unused supply pipe; then I filled the tub again and repeated the process. I might have been running the Missouri river through that tub to-day if a friend had not called and explained that the water was all right (?) and told me that I should never see anything like the Connecticut or Housatonic rivers till I had spent my year West and returned to the Eastern States.

Such water is not only offensive to the sight and of doubtful value in washing, but is a positive injury to the internal economy, and I have personally been obliged to use water from the Missouri, *supposed* to have been purified by settling-reservoirs, but which was only one or two shades lighter than the floor-paint mixture of that noble stream. This is not as it should be. That water was impure, and its use decidedly injurious to the system. Low grades of Indians may live on clay, but man's digestive and eliminative organs were never designed to deal with such a mixture of mud and water as the Missouri or Mississippi rivers furnish. These gross impurities can be removed by allowing the water to stand several days and then drawing off the upper portion, or by the use of some modern filter such as is now in use in Atlanta, Georgia, and in some cities in our own State. But this soil is far from being the most dangerous constituent of river-water. Decaying animal and vegetable matter is washed into the stream by every rain and by the melting of snow and ice, as well as thrown into it by butchers, hucksters, and other tradesmen. Factories discharge their refuse into it, often containing such poisons as arsenic, lead, zinc,

copper, the mineral acids; and more important than all, is the custom of having all sewers and garbage dumps discharge into the nearest river, regardless of the fact that a neighboring city a few miles down the river is dependent upon it for its water supply. This pollution is bad enough at the place where "the sewers empty, but the water may still pass as fairly pure if it will support an abundance and variety of fish life, which is often the case. Going down the stream a few miles, however, we find that fish die when confined to this locality; the sewage has become putrid by decomposition, is fatal to fish life, and the water is thus proven to be unfit for human drink. In this connection, I ask your indulgence for quoting from the report of the State Board of Health of Connecticut, where it is stated:

"A very grave error of fact in regard to the spontaneous purification of running water has gained a wide belief and been more or less prevalent for the past twenty years. It originated from a statement made by Dr. H. Lebel, the medical officer of health for the city of London, some twenty years ago. When criticising a paper of Dr. Frankland, professor of chemistry at the Royal Institution, he made this remarkable statement:

"I cannot agree with Dr. Frankland, that the water of the Thames, after receiving defecated sewage, is unfit for domestic use; for, after a large practical acquaintance with the subject, as it is observed in the principal streams and rivers of England, I have arrived at a very decided conclusion, that sewage, when it is mixed with twenty times its volume of running water, and has flowed a distance of ten or twelve miles, is absolutely destroyed."

"This very positive opinion, by one in so high position, has been received with unquestioning credulity, and is oftener quoted than any other single opinion, to sustain the practice so very prevalent of discharging sewage into rivers. He claimed that the organic matter is almost completely oxidized by the oxygen in the air, and by that dissolved in the water; and that whatever failed of destruction in that way was consumed by infusorial animals and fish, or absorbed by aquatic vegetation. This subject was afterward made a matter of special investigation by the Rivers Pollution Commission, appointed by her Majesty the Queen of England, in 1868. This commission continued their labors for several years, and made several reports of their investigations. In the sixth report, presented in 1874, a detailed statement of the experiments to determine the degree of oxidation of organic matter in running water is given; and as a result of these experiments the Commissioners affirm:

"It is thus evident that so far from sewage mixed with twenty times its volume of water being oxidized during a flow of ten or twelve miles, scarcely two-thirds of it would be so destroyed in a flow of one hundred and sixty-eight miles, at the rate of one mile an hour, or after the lapse of a week. In fact, whether we examine the organic pollution of a river at different points of its flow, or the rate of disappearance of the organic matter of sewage or urine when these polluting liquids are mixed with fresh water and violently agitated in contact with air, or finally the rate at which dissolved oxygen disappears in water polluted with five per cent. of sewage, we are led in each case to the inevitable conclusion that the oxidation of the organic matter in sewage proceeds with extreme slowness, even when the sewage is mixed with a large volume of unpolluted water, and that it is impossible to say how far such water must flow before the sewage matter becomes thoroughly oxidized."

The presence of sand held in suspension in river-water is undoubtedly a factor of no little importance in removing undissolved sewage by sedimentation, but allowing this all the power we may, a considerable amount is left in suspension after the short period usually allotted to a settling-reservoir, and the matter in *solution* still remains, while it is a well-accepted fact that an infinitesimally small quantity of decaying matter is able to produce an injurious effect upon health. Yet I am inclined to believe that dangerous as is this water after the old methods of purification, so called, it may be rendered harmless by the Hyatt method of treating with alum and filtering. Purification, however, is a subject by itself, and we will not enter upon it here.

Where water is stored in lead or zinc-lined receptacles, or distributed in lead or galvanized pipes, there is of course the liability to mineral poisoning, and cases of this nature still occur, although the danger has long been known, and the attention of the public has been frequently called to it. The danger varies with the composition of the water; the purest and most highly oxygenated affecting it most, as do also those containing organic matter, nitrites, nitrates, etc., while waters containing carbonic acid in excess are much less dangerous, forming compounds soluble only with difficulty in the stomach. Owing to the risks attendant upon the use of lead pipes, all water supplies should be distributed through cast or wrought-iron pipes,

and as little lead as possible used in joints and delivery-pipes. Where water is stored, it is always liable to pollution from surface washings, soakage, foul air, and frequently from the passage of foul material directly into it.

Shallow well-water is always to be viewed with suspicion; it is the natural point to which the drainage of a good deal of surrounding land tends, and heavy rains will wash many substances into it. The soakage-water from the ground, in loose soils of chalk and sand, is often very impure. Thus, in a town, the well-water often shows evidence of nitrites, nitrates, ammonia, and chlorine far in excess of river-water in the neighborhood, though the strata are the same. Occasionally, by constant passage of the water, a channel is formed which may suddenly discharge into the well, and probably some of the cases of sudden poisoning from well-water have thus arisen.

A well drains an extent of ground about it nearly in the shape of an inverted cone. The area must depend on the soil; but experiments show that the radius of the area drained is equal to four times the depth at least, and that it often exceeds this, but the deepest non-artesian well will not drain a cone which is more than half a mile in radius. All shallow wells should be protected by good masonry for several feet below the surface, to prevent superficial soakage and the drainage from surrounding elevations.

In summing up, we see that cisterns are subject to pollution from the roofs on which the water is collected, from the introduction of impurities into pipes leading from the roof to the cistern, or into the cistern itself, and also from the materials of which it is built and with which it is lined; wells and springs from the strata through which the water passes to them, from soakage, from adjacent cess-pools, privies, barnyards and the like, and also from surface drainage. Natural basins are affected principally by the nature of the surface drained, while rivers are subject to all these dangers, but more particularly are poisoned by receiving the drainage of towns and cities along their course. Hence, in selecting a source of water supply these elements of danger should always be considered first, and the questions of convenience and abundance can be taken into account later on.

This paper was discussed by Dr. Brown of Leavenworth, Dr. Johnson of Atchison, Dr. Spangler of Perry, and Dr. Bidwell of Leavenworth, giving the advanced views of sanitary science in reference to the purification of water by the filtering process and the other methods that are in use and considered necessary at the present advanced stage of sanitation.

The next paper presented was as follows:

WATER SUPPLY OF THE CITY OF EMPORIA.

BY PROF. W. C. STEVENS, OF EMPORIA.

Emporia draws its drinking-water from three sources: cisterns, wells, and the Neosho river. From reports received from 117 households, I estimate that 45 per cent. of our population use well, 50 per cent. cistern, and 5 per cent. use water from the Neosho river for drinking purposes. These reports also indicate that in 86 per cent. of the wells, the water is elevated by means of buckets, and about 87 per cent. of the wells are so graded and covered as to shut out surface drainage. The wells range from 25 to 65 feet in depth. Analyses show that chlorides and organic impurities are always present in our well-water in greater quantities than would be probable in a soil uncontaminated with sewage. Since in most cases reasonable care seems to be taken to prevent surface washings from entering, subsoil drainage may be taken for granted.

Several wells and cisterns have come under my notice which throw light on this

subject. One well had long been patronized by the neighborhood because of its excellent water, until the drainage from the gas-works was turned into a ditch running within two blocks and a half of the well, when the water began to taste so strongly of this drainage that its use for drinking purposes was discontinued. There is a downward grade from the well to the ditch, and surface drainage is impossible. An analysis of this water showed it to be rank with organic impurities. Now can there be any doubt that the contents of this ditch had all the while been entering the well; for no sooner is something with a characteristic and persistent odor and taste turned into the ditch than its presence is detected in the well two blocks and a half away. Other instances might be cited to show why chloride and organic impurities indicating sewage contamination invariably occur in our wells and uncemented cisterns. Almost all the waste from our household economy is thrown into alleys or drain-wells, (about 70 per cent. of our population throw their slops into alleys, and about 9 per cent. use drain-wells,) where a portion of it soaks into the soil to reappear in our drinking-water supply. and such is the character of our soil that one household may suffer from the carelessness of another in another neighborhood.

Most of our well-water, on standing, has a perceptible sediment. The microscope reveals a quantity of amorphous material, interspersed with bits of vegetable growth, portions of cloth fiber, and fragments of insects. Of the cisterns of our own city, about 46 per cent. are cemented—most of the uncemented cisterns being simply walled with limestone; 47 per cent. of the cisterns are provided with filters, and 25 per cent. of these are cleaned and renewed within periods ranging from six months to three years. Two classes of filters prevail: in one a portion of the cistern is partitioned off by a brick wall, and filled with charcoal and gravel—into this the rain-water first runs, and drains through into the cistern proper; the other device is a hole dug outside the cistern, filled with charcoal and gravel—into this the rain-water is first received, and, after percolating through the filtering material, it runs through a spout into the cistern. Other unique devices, indicating a desperate conviction that something ought to be done, are occasionally met with. A larger amount of impurities is found in the uncemented than in the cemented cisterns, and the reason is evident: when the cistern is full there is a leakage of water into the soil; when the water becomes lowered there is a drainage from the soil to the cistern, carrying with it the washings from the soil; again, the crevices between stones become places for an increasing deposit of sediment. I have even found the water much contaminated in leaky cemented cisterns. If the cistern can leak it may be taken for granted that sewage can seep in when the pressure outward is removed by the lowering of the water.

The filters as commonly constructed and cared for are a delusion. They remove impurities but imperfectly, and when not frequently cleaned and renewed they act rather as concentrators than as removers of impurities. The device already mentioned, which filters the water before it passes into the cistern, if kept well supplied with clean charcoal and gravel, in alternate layers and not promiscuously mixed, and given free access to light and air, would do much toward purifying the water; but if the cistern is uncemented or leaky, the work of the filter would be in a measure undone.

The characteristic sediment of cistern-water contains the little crustacean, cyclops quadricornus, and the rotifer vulgaris and a species of partinesium in large number, together with bits of cloth and insect and vegetable matter. These things may not in themselves be harmful, unless they occur in large enough quantity to taint the water by their decay. They have this significance, however: their presence indi-

icates that the water supply is open to extraneous material, and if by some unfortunate circumstance germs or specifics of disease were present, they could in like manner gain access. There are cases enough on record of calamity befalling from such causes, to make the wise householder wary in this regard.

The Neosho river-water has points of excellence above that of our wells and uncemented cisterns. The slight trace of chlorides and absence of ammonia indicate that its organic impurities are probably not those of sewage. The sediment from our hydrant-water is characteristic of well aerated stream-water which has undergone no artificial process of clarification. In the sediment occur cyclops, quadricassius, and species of algæ, fresh-water sponge, diatoms and volvox, scales of butterflies' wings, and other insect particles.

Up to this time (November, 1888) the water has been forced over the city directly from the engine-house, the reservoirs on Smith's hill being uncompleted. These have a capacity of seven and a half million gallons each, and are so arranged that the water can be pumped into one for settling, and then run into the other for distribution over the city. Pipes are arranged for the washing away of sediment from the reservoirs.

The water is distributed in mains of cast iron from three to sixteen inches in diameter. No other provision has been made for flushing the pipes than by means of the hydrants, and, perhaps because of the awkwardness and inefficiency of this, no systematic flushing is attempted. The advantage of the hydrant-water over that from wells and uncemented cisterns will be apparent when we consider: first, that the Neosho river could hardly receive more soil-washings than these home supplies, and even what it does receive would likely be less harmful; and second, the aëration of the river-water by its plunge into the reservoirs, and the removal of gross impurities by settling, will greatly improve its quality. The unpleasant taste and odor of the hydrant-water noticed at times during the past year will probably not again be present with the reservoirs in requisition.

When we consider that over 70 per cent. of our population drink water subject to sewage contamination, the question becomes a grave one. We see that with us, as must always and in all cases be the case where wells and cisterns are used, the purity of the water-supply depends largely on the methods of disposing of household and personal wastes. Suggestions of remedies in this direction must be kept to the discussion of sewage. I suggest, as direct methods of precaution, that when possible, cemented cisterns be provided with filters and cut-offs, properly constructed and cared for. If this plan should not be practicable, hydrant-water should be used if accessible. If water from wells or uncemented cisterns must be used, it should first be thoroughly boiled. Those who have been using condemned water for years without apparent detriment to health, and who believe that theirs is the best water in the city, may think the measures extreme and useless. Yet I believe the man who puts a lightning-rod on his house and leaves his drinking-water supply open to drainage from the soil, is providing against an enemy by far the less likely to injure him.

It should not be forgotten that the sanitary statistics of towns which have made a systematic provision for a pure water supply show a striking improvement in the public health.

This paper was very interestingly illustrated by charts, showing the impurities of well, cistern and river waters, as demonstrated by very powerful magnifying microscopes, and was very thoroughly discussed by Drs. Bidwell, Johnson, and Prof. Stevens.

The last paper of the evening session was as follows:

LONGEVITY.

BY G. H. T. JOHNSON, M.D., ATCHISON, PRESIDENT STATE BOARD OF HEALTH.

Is human life valuable? Is length of days desirable? The first question has been answered affirmatively by the political economist; a sufficient answer to the second may be found in the longings of the human heart, which fondly hoped from the earliest epoch of history for an earthly immortality. Away back in the dawn of our race it is recorded that a flaming sword guarded the "Tree of Life" lest man might eat thereof and live always. The calends of the ages record the vain but pitiable attempts of man to find protection from death and exemption from disease through the occult agency of planetary influence and the magical operation of amulets, philters, and charms. The mysterious and impotent influence of alchemy and astrology have been invoked in the vain hope of averting man's impending doom. This craving for an earthly immortality found expression in a pagan civilization by the creation of an earthly paradise, dainty and sensuous in its enjoyments, and peopled with questionable divinities, who reveled in scenes of ineffable splendor, throughout an unending round of voluptuous pleasures.

The Mosaic narrative assigns to the inhabitants of the earth during the ante-Noachian period, lives of incredible length, as estimated by our present experience and methods of computing time. There must have been some mistake in the translation of the Archaic record, or the great longevity of the race from Adam to Noah must be accounted for by reason of more favorable environment, or perhaps it was due to some disturbance of prediluvian atmospheric condition more favorable to longevity than now exists, or the freedom from cumulative evils of heredity, which, with its tendency to decay and early death, has been the woful heritage of our race for ages past. As generation after generation succeeded each other in their rapid march, the sins of the parents were visited upon the children, and the blighting effects of hereditary disease sapped the physical stamina of the race, cutting shorter the span of human existence until in the post-diluvian period we hear the Psalmist declaring: "The days of our years are threescore years and ten, and if by reason of strength they be fourscore years, yet is this strength labor and sorrow; for it is soon cut off and we fly away." From the days of the Psalmist down the steep declivity of time the life of man seemed to gradually decrease in length of days, so that in the seventeenth century he lived but twenty-one years, on an average.

At this critical epoch in the history of our race, when the average man scarcely reached the years of maturity, and individual achievements had but small influence in the affairs of the world by reason of the brevity of life, indications of a change for the better made their appearance. Symptoms of a general awakening of the sleeping intelligence of the people were visible. A higher value was placed upon human life, and more intelligent effort put forward to prolong it. By reason of these favorable changes in the condition of the race, the average of life had increased to twenty-nine years in the eighteenth century. This was the century that witnessed the inauguration of sanitary effort, more especially in the civilized communities of Europe. Progressive men began to doubt that the hidden causes of disease and premature death were attributable to the dispensation of Providence, planetary influence, or other occult forces in Nature; and instead of seeking exemption from these by appeals to the mysterious influence of the magician and astrologist, they sought for causes of disease in their environment. The air they breathed, the food they ate, the water they drank, and all the tangible forces of Nature were closely scrutinized, and their relation to disease intelligently investigated. This eager search in the domain of Nature, and the careful investigation of her laws, threw a flood of light

upon the pathway of the scientist and sanitarian, revealing in many instances the etiology of diseases, the origin of which had previously been shrouded in mystery; and they found that the removal, when possible, of the causes of disease conserved the public health and prolonged the life of the people.

As the result of the discovery of the causation of disease, a system of preventive medicine, as yet very imperfect, has been founded under the beneficent influence of which the typical man of the present century lives to the age of forty-nine years. And if the sanitarians of the present and succeeding generations labor faithfully and intelligently, and receive the cordial assistance of the public, the medical profession, and the legislators, the average life of men a century or two from the present will be at least one hundred years. Naturalists have laid down as a rule, generally applicable to the members of the animal kingdom, that the period of development and growth, from birth to full maturity, is one-fifth of the whole natural period of life. Man reaches maturity at a period ranging from eighteen to twenty-five years, varying through the modifying influence of climate, habits, mode of life, and hereditary tendency. The average may be fairly placed at twenty-one years, as the period of terminal growth and maturity. This estimate would give one hundred and five years as the maximum duration of human life, and, with the progress of sanitation, the physical and social sciences, and improved methods of living and due attention to the laws of health and heredity, there is no apparent reason why this limit should not be the rule rather than the exception. In the past history of the race, desolating wars, destructive plagues, famine, fire, flood, cyclones, earthquakes and other devastating casualties have contributed largely to keep down the average of human life. Besides the losses of the battle-field, the sickness and deaths incident to long and arduous military campaigns, in unhealthy climates, which frequently destroyed more than the missiles of battle, there is to be taken into consideration the many accidents of civil life, fateful contingencies of mining, maritime adventures, and railroad life, the hazards of border and pioneer life, in all of which the brave, manly, adventurous spirit, coupled with the fine physique, the hardy endurance of robust manhood, predominate. These are some of the many causes that impair the vitality of the race, and reduce the number of those who else would have attained a vigorous old age, and perhaps given to the world a robust, long-lived posterity.

There is a period midway in the measurement of our years known as the "prime of life." At this period, which with people of good habits and unimpaired constitutions is usually reached at from fifty to sixty years of age, and in persons of irregular or dissipated habits much sooner, the system reaches perfection and comes to a standstill. The vascular and muscular systems with their wonderful mechanism are complete, and perfect in their action. The nervous system sustains without fatigue the demands made upon its sensibilities; all the attributes of a well-matured manhood predominate; the mind, unfettered by the grosser appetites and passions of earlier life, exercises a masterful influence over all his actions. It is a point in life's journey when the wise man has attained the complete mastery of his appetites, passions and impulses; when the dictates of reason predominate, and mature reflection takes the place of hasty thoughtlessness. Here from his serene height he views unmoved, save by feelings of pity, the surging masses in the valley below him, as they struggle with their unconquered passions, unbridled appetites, uncontrolled impulses, mad ambitions, and canker-eating cares—the great majority of them destined to fill premature graves before they ever experience the supreme happiness of the dweller on the higher plane of life, who, having subdued all these powers and influences within and about him, looks calmly forward to the sunset of life. Here upon the apex of vitality, like an eagle upon some towering cliff, looking proudly and defiantly across the bright cloud-rifts of the opening future, or glancing with

quiet disdain over the mists and gloomy shadows of the past, he rests and revolves his plans. It may be five, and it may be twenty years, that he holds his proud pre-eminence, and then some sudden unlooked-for grief, some swift and heart-wrenching calamity, some abrupt invasion of disease, breaks like a storm-cloud upon the dizzy eminence, and with trembling limbs he turns down the declivity of time, and winds his way with carefully selected foothold towards the sands of the endless shore and the eternal ocean.

Before proceeding to the consideration of the many causes and conditions which tend to promote the health and longevity of the people, special mention should be made of a strong salutary influence in this direction, which at present, unfortunately, is limited in its extent to Kansas and one or two other States: I mean the great temperance reform. There has not been within the past century a movement that exceeded in its possibilities for good this great reform as witnessed in Kansas during the past four years. If the people of this commonwealth shall steadily maintain their present high average of sobriety, at least two decades will be added to their average life, and a largely increased vitality will be transmitted to their posterity. That this prediction is not visionary, is proven by the well-attested fact that the temperate man lives to the age of sixty-two, while the intemperate man only lives thirty-one years. As if to corroborate the correctness of this position, the records of the past year of an insurance association doing business in Missouri show a loss by death of twenty-one members per one thousand, while in the same association in Kansas, with members of similar ages, the loss was only twelve per one thousand. As there is no climatic or other apparent cause to account for this greater mortality in the adjoining State of Missouri than in Kansas, the true explanation is doubtless found in the greater temperance of our people. In Missouri the open saloon doubles the mortality, while strictly enforced prohibition in Kansas reduces it one-half.

The believers in palmistry claim that the life-lines of the human hand supply the infallible indications of life, whether it be long or short, while physiognomists see in the breadth of the face and certain measurements at the base of the brain unerring evidence of longevity. The temperament and color of the hair and eyes and complexion are important factors in the problem of longevity. Physiologists give preference to the sanguine temperament, gray, blue or hazel eyes, and light or brown hair. Life insurance companies select for their risks those whose weight, height and symmetry of form bear definite relations to each other in a tabulated scale of weights and measures, and whose family records are good—avoiding all risks when the record shows a hereditary transmission of grave diseases.

In the annotations to Lord Bacon's *Essay on the Regimen of Health*, he says:

"Of persons who have led a temperate life, those will have the best chance of longevity who have done hardly anything but live; what may be called the neuter verbs, not active or passive, but only being; who have had but little to do, little to suffer, but have led a life of quiet retirement, without exertion of body or mind, avoiding all troublesome enterprise, and seeking only comfortable obscurity. Such men, if of a portly, strong constitution, and if they escape any remarkable calamities, are likely to live long."

This statement of the conditions which are favorable to long life, by Lord Bacon, will in the main be indorsed by the sanitarians of the present, with the exception of the importance which he attaches to a life of inactivity. Action has been defined as Heaven's second law, and a reasonable amount of exercise, both physical and mental, is conducive to good health and longevity. It is only the excessive exertion, the over-haste, and more especially the worry and fret, the anxiety and strain of business and professional cares, the bitter disappointment of mad ambition, that impair the health, make life unhappy, and lead to premature death. There are not a few men in this country and Europe who are nearing their century-mark, and who have led most active lives and exercised a potent influence in the world of business, sci-

ence, letters and arts, and in the councils of the statesman and warrior as well. In a New England town recently died, at the advanced age of one hundred years, a venerable man who for the past fifty years had held an important official position in a railroad company, performing faithfully and intelligently the responsible duties of his office, up to the day of his death. It is not true that activity, mental or physical, if calmly engaged in, shortens life. Inaction, idleness, a state of inertia, either mental or bodily, do not prolong human life, but in many cases lead to premature decay and death.

Longevity, as a rule, depends upon the strict compliance and conformity to the laws of hygiene, yet there are many conditions over which the individual has no controlling power which exert a marked influence on the length of life. The most important of these is hereditary transmission of qualities derived from a longevous ancestry. Heredity may be defined as the net product of the habits of our ancestors for the past four or five generations. If their habits have been uniformly good, they have been free from disease, and their vitality has increased from generation to generation, and we have inherited the blessing of length of days and constitutions free from the taints of hereditary disease. Conversely, if their habits have been bad, death claims us early, and life is but a span. By the most complete obedience to the laws of health these hereditary tendencies to outbreaks of disease may sometimes be kept in check, and the inevitable hour of doom postponed to a good old age, thereby proving the exception to the general rule that none but descendants of longevous parents can hope to attain to old age. Occasionally the man who has inherited longevity and a great overflow of animal life and vitality will be found drinking the very dregs of the whirlpool of dissipation, violating every law of nature, and yet live to threescore years and ten. These are the cases which skeptics of sanitation bring forward as evidence that the penalty does not always follow the act of transgression of law. These scoffers at the purity of life and the benefits to be derived from correct habits forget the important fact that this same individual who reaches old age in spite of violated law would have lived much longer and better had he complied with the just rules of hygiene. By reason of good habits on the part of his ancestors he came into the world with a surplusage of strength which enabled him to live under conditions when the majority of men would have died before they reached the meridian of life. As in the moral world "the way of the transgressor is hard," so in the physical domain there is no such thing as violation of law without punishment; this may be postponed for a time, but its enforcement is as certain as fate. One of the saddest thoughts connected with the criminal acts of these transgressors of law is, that the effects do not cease with their lives, and that the just demands of the outraged law are not fully satisfied in their punishment, but the penalty for their wrong-doing will be visited upon their posterity to the fourth generation.

Oliver Wendell Holmes, when asked at what time the training of a child should begin, replied, "A hundred years before it is born." By this answer, he takes the undoubtedly correct position that the parents of this generation will be largely responsible for the condition—mental, moral, and physical—of the men and women who shall act their part on the stage of life a hundred years from the present.

Next in importance to heredity and habits, in relation to longevity, is climate. The heat of the torrid zone and the rigorous cold of the polar regions are alike unfavorable to extreme longevity. In the more even temperature of the temperate zone are found the conditions favorable to long life. Residence in malarious districts, or in localities where are found imperfect drainage, bad sewerage, or other unhealthy surroundings, will greatly lessen the chances of reaching the hundredth milestone in the journey of life. Marriage is a condition favorable to longevity in

both sexes. Statisticians find the average life of married women to be four years longer than that of maiden, and the average of the married man to be five years longer than the celibate.

The following statistics will be found interesting in this connection: In men of twenty-five to thirty years of age, the married furnish six deaths, the celibates ten, and the widowers twenty-two per one thousand; and from thirty to thirty-five years, the deaths are respectively seven, eleven and nineteen per one thousand; and from thirty-five to forty years, it is seven and one-half, thirteen and seventeen and one-half per one thousand, and so on for all ages.

In women from thirty to thirty-five, the deaths among maidens are eleven, while among wives it is only nine per one thousand. The difference increases until forty-five, when for a time it diminishes somewhat, then again increases, and in women from fifty to fifty-five there are but fifteen to sixteen deaths per one thousand among wives, while maidens and widows furnish twenty-six to twenty-seven deaths per one thousand. Thus is answered in the negative the question, "Is marriage a failure?" As a great conservator of public health and a powerful influence in favor of longevity, true Christianity takes high rank. The conscientious Christian whose unwavering faith anchors him to the throne of the Eternal One, and who in all the trials and tragedies of life feels that the eye of Omniscience is watching over him and the Omnipotent arm is around and about him, will go fearlessly through trying vicissitudes that would kill thousands of your modern agnostics, and come out unscathed with the day-star of hope in his heart and songs of praise of thanksgiving on his tongue. The statistician who shall make a reliable record of the comparative length of days of the faithful Christian and the scoffing unbeliever will have abundant material for a startling revelation.

An examination of the census (United States) was found to be so unsatisfactory that very little matter culled from its record was deemed worthy of a place in this paper. The narratives of long-lived persons were full of unwarranted assumptions and manifest errors of computation. In the census of 1850 the number of whites returned as attaining one hundred years or more is 787, or a ratio of 1 to 25,000, while in the colored race there were returned 1,768, or nearly one in every 2,000. In the census of 1860 there are reported 927 whites, being in the ratio of 1 to nearly 30,000, while in the colored there are reported 1,940, or 1 in about 2,300. In the census of 1870, of the native white population there were returned 642 centenarians, being a ratio of 1 in 44,000; of the foreign white population there were 2,573, or a ratio of 1 in 2,000, about the same ratio of the colored race. If the records and sketches of longevity in the census are accepted as correct, the well-nourished, well-kept, comfortably-clothed and housed native American lives a much shorter life than the ill-fed and poorly-housed and clothed foreigner, or the ignorant and scrofulous negro; such a position is preposterous. Twenty of the ignorant classes, who live in pinching poverty daily, subjected to the most inclement weather, in order to eke out a bare existence, with no knowledge of the primary laws of health, live to be one hundred years old, while only one of the intelligent and well-cared-for classes reaches this age. Comment, in the face of such statistics, is superfluous. A reasonable explanation to these fallacious claims of extreme old age among the poor and ignorant may be found in their inability to keep a correct record of their ages, also in their disposition to exaggerate in order to excite wonder and compassion. It seems to be a marked trait of this class of people to pretend to be extremely aged — just as it is a charming peculiarity of the refined native-American women of culture *never* to grow old. It may seem ungallant to make a record here of the well-established fact that the proportion of women to men who reach one hundred years is about two to one. The ratio of deaths of persons reaching one hundred years of age or more is about

nine in 100,000. This corresponds very nearly to the Carlisle tables of mortality, which show that of ten thousand children born one will live to 104 years. The average life, however, has been perceptibly increased since the construction of these celebrated tables. It would add unnecessarily to the length of this paper to enumerate many of the well-authenticated cases of longevity; reference will be made to a few only:

"Chisley Heal, a veteran pensioner of 1812, died at Searsmount, Me., October 12, 1888, at the age of 109." The death is reported in Turkey of a Mohammedan named Hadzel Sulejam Saba, who had reached the age of 132 years; he had seven wives, sixty sons, and nine daughters. Prof. Benjamin Silliman, in his tour of Quebec in 1819, records the case of Henry Francisco in the following description: "Two miles from Whitehall, on the Salem road to Albany, lives Henry Francisco, a native of France, who believed himself to be 134 years old, and the country around believe him to be of this great age. He was upstairs at his daily work of spooling and winding yarn; his stature is of middle size, and although his person is delicate and slender, he stoops but little. His complexion is fair and delicate, and his expression bright, cheerful, and intelligent; his hair is perfectly snow-white, except on his neck. He retains the front teeth of the upper jaw; his voice is strong; his hearing very little impaired; his eyesight is sufficient for his work; his health is good, and has always been so. We are able to fix the time of his birth in 1686, and therefore to have completed his hundred and thirty-third year on the 11th of last June. He saw Queen Anne crowned, and fought in Queen Anne's war; was at Niagara, Oswego; wounded in Braddock's defeat, and carried prisoner to Quebec. He has had two wives and twenty-one children. The youngest is a daughter fifty-two years old. He abstains almost entirely from animal food; his favorite articles are tea, bread and butter, and baked apples. The oldest people in the vicinity remember him from their earliest recollection as always being much older than themselves, and a Mr. Fuller, who recently died here between eighty and ninety years of age, thought that Francisco was 140." Within the past thirty days, Capt. John Spence, the oldest inhabitant of Accomac county, Md., died at the advanced age of 112. He was born in 1776, and cast his first presidential vote for Thomas Jefferson in 1800.

The limit of this paper will not permit a reference to other cases. Those interested in this subject will enjoy reading the *St. Louis Globe-Democrat*, which publishes weekly brief historical sketches of old people, and has in the past two years given these sketches of more than three hundred centenarians, besides printing brief sketches of more than one thousand who had reached the age of eighty-five to one hundred years. These reports can be accepted as in the main reliable; for a newspaper reporter is in the habit of getting at the bottom facts, and has too much professional pride to permit an octogenarian to pass muster before him as a centenarian.

Within the past few years there has been organized and put into active operation in this country a movement which promises much for the health and longevity of the race. This movement is the great sanitary work which is being pushed forward by boards of health, national, State, and municipal. Much of the time of these boards has been taken up in organization, and the maturing of plans for the impending battle; yet they are not without results to show for the comparatively short time of their existence. In England, where they have been enforcing sanitary measures for the past century, the death-rate has been reduced from forty-two to twenty-one per cent. in one thousand; and in the past twenty-five years the general rate in England has been reduced twelve per cent., and two years have been added to the average life in the last decade.

While vital statistics are not as complete in the United States as in England, yet a most favorable beginning has been made here. The records show that in Boston

and New York the death-rate since 1846 has been reduced nine in one thousand, and in Brooklyn four, while Memphis has decreased her death-rate twenty-two, and Chicago sixteen per cent. Some twenty thousand lives have been saved in Chicago in the past five years by enforcement of wise sanitary measures. In Massachusetts, where the first State Board of Health was organized and where statistics are assuming shape, the farmer lives to the age of 66.37 years and the professional man to 52.16, and sanitary regulation has reduced the death-rate from infectious diseases in ten years from 28 to 18 per one thousand, and the number of deaths per thousand in the past fifteen years has been only about half what it was for the preceding fifteen years. Since the organization of health boards in this country, more has been learned about the origin, proper management, and the most efficient measures for stamping out infectious diseases than ever before, and health officers and sanitarians are marshaling their forces for a general forward movement against all forms of preventable diseases. The stupendous importance of this movement in the interest of the health and longevity of the people can be understood only when it is remembered that almost one-half of the one million of deaths which take place annually in this country are due to preventable disease, and are an unnecessary waste of valuable life. Wipe out the known causes of preventable disease, and you almost double the longevity of the average man, and push him a long way upward toward the century-mark. Wonderfully startling in its possibilities for good to our race will be an effective system of preventive treatment founded on the best applied laws of sanitary science.

The Chinese erect triumphant arches in honor of those who have attained the dignity of one hundred years, as a testimonial of the virtue, temperance, and other good qualities possessed by those who have attained so great an age. Should he not be crowned with the victor's wreath who shall teach us with greater certainty how in greater numbers we may reach in good condition the century-mark of existence? Should not imperishable monuments be erected to the men who, by their labors in the field of sanitation and preventive medicine, shall make life more secure, death less frequent, and lift the masses of our race to a higher plane of health, happiness, and longevity?

The convention then adjourned until the next morning.

SECOND SESSION.

EMPORIA, December 6, 1888—9:00 A. M.

The convention was called to order by President Wright.

The first paper of the morning session was as follows:

ADULTERATION OF FOOD AND DRINKS.

BY D. SURBER, M.D., MEMBER OF KANSAS STATE BOARD OF HEALTH, PERRY.

The degree to which a nation or community has advanced in civilization, may be measured by the attention it gives to the protection of health and the prolongation of the lives of its citizens. In the dark ages people lived in filth and were poisoned by their own secretions by the thousands, and died by the thousands; but soon after the establishment of the famous hygienic laboratory at München, and as the result of the investigation made at that laboratory, certain municipal sanitary improvements were made by which the death-rate of that people was reduced very materially. And

now, nearly every civilized country manifests great interest in the protection of health.

Germany established a number of hygienic institutes in connection with her universities, and all students are instructed in sanitary science. The municipal laboratory in Paris is maintained by the city, and for a small fee anyone may have any sample of food or drink tested for adulteration. In this way the people of Paris have become quite thoroughly posted concerning adulterations; and from this knowledge the wisest and most satisfactory enactments against food adulterations have been made and enforced.

The Kansas State Board of Health is not an executive body; its powers are wholly advisory, and yet it has accomplished much good by its educational measures, and there is hope that its powers and duties may be strengthened and widened; and there is needed under its jurisdiction some place where every health officer can have samples of food and drink tested for impurities and adulterations. This cannot be done for nothing, but at a minimum fee. There are problems in the study of the origin and spread of disease which can be solved only with the aid of a thorough experimental test. To illustrate: A grocer sells to fifty people some meat which is apparently all right, but it sickens every one who eats it. What is wrong? This can be ascertained only by careful investigation, with all the aid that science can bring to bear in the case. The grocer cannot be expected to pay the expense of the investigation, because he is possibly not to blame; and certainly those poisoned by eating the meat cannot be asked to pay it. The State should do this work; it should endeavor to ascertain the impurity, and instruct the people against future similar calamities. There can be no question as to the duty of a State in protecting the lives of its citizens; and no one can deny the fact that education in sanitary matters is one of the most powerful protective aids that can be furnished any people.

Most of the European governments have adopted stringent measures to stop the sale of adulterated articles of food. In Great Britain, a number of public analysts have been appointed under an act of Parliament. They analyze fifteen to twenty thousand samples, detect and expose three to four thousand adulterations, every year. The German government had in 1880 nearly three hundred thousand samples analyzed, and obtained upwards of three thousand convictions in the courts.

In New York, ten thousand dollars were appropriated for investigating adulterations in food, and in 1883 thirty thousand dollars was voted by the Legislature for the same purpose. New Jersey, Massachusetts and other States have made liberal appropriations for like purposes.

It has been estimated that in States having no inspection laws, many articles of food suffer adulterations to the extent of from forty to sixty per cent., and in no one article of food is this adulteration greater than in that of milk. In Chicago, it has been shown that not more than ten per cent. of the milk in that city is wholesome and unadulterated. It was estimated in New York city, a few years ago, that the sale of water for milk (and what kind of water was a question) amounted to about four million dollars per annum, for water mixed with milk. In the city of Baltimore the estimated quantity of milk used daily is about one hundred thousand quarts, for which about seventeen thousand dollars are paid; and of this milk about one-fourth is water—so that the people of that city are paying for water in milk over fifteen hundred dollars a day, or more than five hundred thousand dollars annually, which was all sold for pure milk. Strange, but true. Some milkmen do not hesitate to admit that, in conducting the milk trade of large cities, adulteration is the rule.

Perhaps the worst effects of adulterated milk are to be found among young children, who feed largely on milk. In 1868, the deaths from cholera infantum, in Bos-

ton, Mass., were 487; while in an equal population outside the city the death-rate from the same cause, during the same time, was only 100.

In New York, after the milk inspectors began their work, the infant mortality was 3,673 less in 1883 than in 1882, when there were no inspectors. This prompted the Legislatures of many of the States to pass stringent acts to prevent the adulteration of milk, tea, coffee, and many articles of food.

It is not necessary to show that adulteration has been practiced in other States to demonstrate that precaution should be taken against it in this State; if arsenic has been put in candies in France, or red lead into curry powder in England, or poisonous tin-ware has been sold in other States, it is time for somebody to find out whether these articles are sold here in our own State.

When it is shown that one-half the vinegar sold in our own markets is poison because five cents worth of vitriol will make a barrel of it, then it is time that everybody should know it; and when it is shown that out of one hundred and eighty articles of the spice kind analyzed in Canada ninety-three were adulterated, and of several kinds not a sample was found pure, and that in New York city Dr. Mott found alum in every one of the sixteen baking-powders he analyzed—alum being 3 cents a pound, cream tartar 30 cents—and when a large Boston manufacturer of spices, powders and grocery supplies acknowledges that he fills orders from the West for cream tartar that contains terra alba, then it is time for us to be sure that we are not using the same article in Kansas. When it is shown that sugar and syrups are largely adulterated with glucose, and that glucose is manufactured by a process which incorporates with it oil of vitriol and other deleterious substances, and that in Michigan, out of seventeen table syrups analyzed fifteen were found to be made of glucose, and that a single gallon of one of them contained 141 grains of oil of vitriol and 724 grains of lime, then shall we not be on the lookout for these articles in our own markets? If our sugar and syrups were all pure, our oleomargarine of the best, our vinegar all from cider, our tin-ware all safe, our baking-powder all good and free from dangerous ingredients, still there is constant need of competent inspectors to keep out poisonous adulterations, which are liable to be brought here from other places.

One cannot read any of the more recent publications of our own or foreign authors on this subject and avoid the conviction that some adequate provisions in law must be made for the prevention of a frightful imposition of the dangers involved in modern adulteration of articles of the most common use. Where life is placed in constant and imminent peril, when it is known that the following articles are sold for domestic use in the condition annexed, then it must be admitted that some exercise and control over the adulteration of food and drink is necessary to the welfare of the people: Meats of various kinds are sometimes diseased and unfit for use as food, and liable to produce the most dangerous results. It is undeniable that sick, maimed, starved, and dying animals are sometimes slaughtered and sold, in one form or another, for food in the markets. Pork in which trichinæ exist produces dangerous and fatal diseases. Mutton, the flesh of sheep, suffering with broxy or modified anthrax and erysipelas, from severe bruises obtained in transportation, will produce disease in those who eat it. Milk, tea, coffee, sugar, flour, butter, lard, confectionery, are all more or less adulterated. I might continue the list, but enough has been given to show the pressing need of efficient legal regulation to the extent, at least, of giving boards of health and public inspectors power to search for, seize, and destroy such compounds or articles as may be suspicious or unfit for food.

We should take care of and protect from fraudulent adulteration the substances on which our existence depends. It cannot be doubted that a fast-advancing public

opinion will, ere long, fully recognize the importance of this fact, as above any mere objection of a fancied disregard of personal liberty or property-rights invested, in the control of dangerous commodities. A proper inspection, supported by honest merchants, can largely protect a community from fraudulent under-selling of unprincipled adulterations, and thus protect the reputation for honesty in this respect, which would be worth millions to the trade of the State. Arrest every man who ought to be arrested; stop all business of adulteration which ought to be stopped; publish in the daily papers every fact which ought to be published. Such a course would benefit every man, woman and child in the State, except those who wish to get rich by poisoning and defrauding their fellow-citizens.

Drink, of which water is the first and most important to the human family, is not properly implied in this subject of food and drink adulterations; but the adulteration of tea and coffee, our every-day food-drinks, may be classed as a *tea*-total abomination. Many dealers in the articles refuse to drink the beverage, because of their foul contaminations. Nervous complaints have always been associated with the use of these articles. The Chinaman has an old trick of making and drinking his tea, and drying his leaves over again, and selling to the Christian merchants of America all manner of fraudulent leaves which enter into the composition of "black teas." Green teas are poisoned with dirt, black lead, turmeric, French chalk, and Prussian blue. All these adulterants make tea so serviceable to keep one awake during the hours in which he should sleep and rest. What shall we say of coffee? There are many ways to cheat in it, especially the ground coffee; chicory and dandelion are its best-known ingredients for adulteration. Prof. Beer, of Vienna, forbade his patients to drink chicory coffee, regarding it as a cause of aneuritis. The more coffee is doctored the more the sellers praise it. We also find mixed with coffee, roasted wheat, rye, barley, beans, parsnips, acorns, horse-chestnuts, baked livers of oxen and horses, all used to mix with coffee as adulterants. Dr. Hassell applied the microscope to various articles offered for sale in London, creating much excitement there when he found adulteration reduced to a fine art. A hundred samples of coffee exhibited little coffee at all. He found superior articles debased by inferior ones of the same kind, and, what was worse, poisonous substances added to improve the appearance of the pure article.

In speaking of the adulteration of drinks, we find art supplanting nature everywhere, especially in the intoxicating drinks. All the imported as well as the home-manufactured wines are counterfeited. Gin and brandy are extensively adulterated. Ales are bittered and made poisonous by *cocculus indica*, and other poisons. Lager beer is cheap, filthy and unwholesome. Whisky is charged with fusel oil, and adulterated with strichnia and other poisons. Indeed, it is now generally believed that delirium tremens is principally caused by the adulteration of alcoholic drinks; and the prevalence of Bright's disease and other renal disorders is attributed by many to the wines, ales and beer adulterated and drank to excess by the people.

A hand-book to frauds on intoxicating drinks would be an invaluable contribution to our literature; the enumeration would be large enough to astonish every reader. From the effects which the use of alcohol produces upon the blood, brain, stomach and tissues of the body, it is highly reasonable to infer that intemperance may become itself a disease. No one doubts when a man has delirium tremens that he is diseased, yet it seems to require great sagacity to perceive that such is the fact; and that it is a disease of the brain, the insane actions of persons under its influence unmistakably demonstrate. The every-day experience of the insane actions of habitual drunkards certainly indicate that habitual drunkenness is a form of insanity, or at least so closely allied to it that the individual is a subject for physical and

mental treatment in some reformatory, so that by the absence of temptation to drink beverages he may be able to regain self-control over his diseased appetite. The alcoholic-drink habit once established, operates like any other disease, independent of the will of the person; though he may refuse to gratify his appetite, he is not able to control the craving or the cause that gave rise to it. And when medical men clearly comprehend that intemperance is a disease, they will pause before prescribing so dangerous an article as alcohol, even as a medicine, unless with the same care as other poisons. A single mug of beer at dinner, prescribed to tone up and strengthen the patient, has often ended in the production of a craving that led to the physical, mental and moral wreck of the individual. Indeed, few physicians to-day actually believe in the strengthening and toning power of alcohol. It is vain to ask a man to exercise self-control, while you administer to him an agent whose physiological and psychological effects deprive him of the power to exercise that virtue.

It may safely be said that the adulterated intoxicating drinks of to-day produce more insanity than any other known cause, not even excepting hereditary predisposition, for hereditary insanity is often itself the result of poisonous alcoholic drink—interfering with the nutrition of the brain, weakening the physical and mental stamina of the whole man, and which may be transmitted to other organizations of like character. It is said that lunatics and criminals are as much manufactured articles as are steam engines, calico, or printing machines, only the process of the manufacture is so complex that we are not able to follow it. Then it is certainly a crime of the deepest dye for any State or nation to protect the sale of drink poisoned by adulteration, any article that diseases the body or destroys the minds of men and women and converts them into imbeciles and maniacs. It is as well established as any fact in nature and physiology, that the children of the intemperate are often physically and mentally weak, and are predisposed to their own vices.

There is no nobler or grander heroism than that which overcomes the hereditary craving for alcohol. Moderation in alcoholic drinks is impossible. The first drink may set the whole organism on fire; then a caged lion is let loose which the victim has no power to subdue or stay. The vices of a people are the origin, and if the custom tends to keep the fountain impure, it can never be righted in its overflow, no matter how learned or wise the managers may be; the people's vices are the faulty customs of to-day.

Then to permanently secure the comforts of life and property of the nation is the true function of the government; therefore the homes of the people demand protection against the insidious poisonous adulterations which constantly threaten every phase of our civilization.

This paper was very thoroughly and interestingly discussed by Drs. Bidwell, Brown, Spangler, Gardner, Redden, Rev. Mr. Milliken, and Prof. Dinsmore.

The next paper was as follows:

VEHICLES OF DISEASE.

BY ROBERT KING, M.D., OF EMPORIA.

There are so many factors in the causation of disease that a confusion of terms constitutes one of the chief difficulties in the way of their profitable discussion.

One cannot avoid using words occasionally which are associated with other ideas than those for which expression is sought. Misunderstandings thus provoked can certainly have no place here. Let us first, then, regard all causes of disease as being

included in two comprehensive classes. The first of these classes may be designated as mediate causes, and the second as remote causes.

The first, or mediate class, includes all which contribute to bring a poison within the environment of the individual, so as to expose him to its virulence. The second, or remote class, includes all causes which, when brought within the environment of the individual, produce specific abnormal results.

It is plainly seen, therefore, that the nature of the remote cause must decide as to the vehicle that is competent to carry it from place to place. For instance, it must be soluble in water, else pure water cannot carry it very far. And so a liquid, or a gas, must have its own appropriate means of distribution. It is needful then, first, to ascertain the nature of a remote cause before considering its carrying agents; and it is just here that theories are all but numberless. One asks: And is there really any such thing as a germ of disease? Another asks: And is it a live thing or a dead thing? Still another: If it is a live thing, is the protoplasm which constitutes the basis of the thing's life, the essential part of the thing's virulence? Or, does this protoplasm manufacture something which does the deadly work, while the thing itself is innocent? Neither this nor that, says another; but the thing is only a sponge, which absorbs the poison from its surroundings, and carries it on very tiny wings into human mouths and lungs, and there deposits its burden of venom. Then comes just one more, declaring that the rest are all wrong. That the poison is only a vapor, mingled with the air we breathe, and dissolved in the water we drink, and that wherever air and water can penetrate, they carry their loads of virus.

Volumes upon volumes have been written upon material and etherial elements involved in this destructive warfare upon humanity, and volumes upon volumes will yet be written, so we can have no possible hopes of having the last word in this discussion; therefore brevity is excusable on this account, even if it were not itself a virtue.

All are doubtless familiar with the entire catalogue of theories, and they need no rehearsal here, but still, for the purpose of illustration, one may be referred to, though it can hardly be called new, yet it has its peculiarities. It is this: That we have, as a result of work in the laboratory of plant-life, a series of substances called vegetable alkaloids. So also we have as a result of the work in the laboratory of animal life a series of animal alkaloids. This is well known to be a name given to those organic bases found ready formed in the bodies of plants and animals.

Many of these alkaloids act as irritant poisons to the human system. Some can be traced to the glands by which they are secreted, while others may be supposed to be the secretions of glands, although those glands have neither been described, located, nor their location even surmised. Now the naked theory is, that these alkaloids constitute the only remote cause, or causes of human disease. Now to claim that there is but one form of substance that is capable of producing or propagating disease, requires one to face almost insurmountable obstacles; and, on the other hand, to multiply these forms indefinitely, is to tread upon just as dangerous ground. Indeed to champion any theory is to make one's self the victim of the old Dublin-road story: no matter which road you take you will heartily wish you had chosen some other. And yet we will select this one, for the purpose of bringing out more fully the strength of the position in which the others are entrenched. To maintain this view for a single moment, we must allow of the truth of the statement, that all the forms of virus causing disease in the human body are compounded in the tissues of living organisms, remembering at the same time, that there are doubtless many forms of disease which are not due to the action of any specific virus at all.

Again, these alkaloids being produced within the bodies of living organisms, they

would doubtless be most freely soluble in the fluids of living bodies. Experience favors the opinion that they are certainly very soluble in these fluids.

The world seems just now to be looking at the bacteria and the infusoria and the microbes for the cause of about all the evils against which humanity rebels. These enemies of human happiness are so minute, that they become diffused through the air in the form of invisible particles. And if they can do this when dried, and thus convey the poison in their desiccated bodies, it certainly follows that the particles of dried virus which float into human nostrils by such a vehicle could all the more easily float upon the breeze if the added weight of the microbes were removed.

But have we any proof that any form of virus is capable of propagation in any other than its own native kingdom? In other words, can animal virus be increased within plant tissues, or vegetable virus within animal tissues? Pasteur has cultivated the virus of many diseases. In the process of cultivation its strength becomes diminished either from the reason that the proper food is not furnished the bacteria or microbes, or else the bacteria or microbes do not form the virus within themselves, but only contain it as vehicles. If these organisms are plants, we may judge by analysis that they cannot form animal virus within themselves, let their food be ever so appropriate. But if they are animals, food is the all-important requisite.

Again, in the bacillus of the tuberculosis, or consumption, we have a positive, constant form of a body that is present in the debris of the broken-down tissue thrown off from the lungs in this disease. This much we cannot doubt. That it produces a similar disease when introduced into the body of an animal, we may very much doubt, but it is wise for us to accede to its reality in the present stage of the discussion throughout scientific circles. These facts, however, prove nothing more than is proven by a thousand other facts that are well attested. It proves that either they form the virus within their own tissues, or else are that species of bacteria which thrives in just that medium, and may absorb some oxidized element from that medium. That they are voracious little savages that eat out the vitals of humanity as a pastime, is beyond all intelligent belief.

But someone asks, how about the efficiency of fumigations and other means of combatting disease and limiting its powers? All we can say at present is, that, so far as we know, no substance or vapor is destructive to oxidized animal matter unless it is combined with oxygen. Sulphur in combination with oxygen forms acids that are destructive to such matter; and it is perhaps true of sewer gas, that its depressing effects arise wholly from this source. If this be the case, the warmer the room into which sewer gas escapes, the greater the danger, as heat greatly assists in rendering it volatile. If, however, there is an abundance of noxious gas in the outdoor air of any locality, the warm sun should favor its diffusion, and the lower temperature of the night would favor its condensation near the earth's surface. This accords well with the known facts in regard to the debilitating influence of night air in malarial localities; and also that a fire be kept burning before the doors of cabins in such places is in high repute as a preventive of sickness from malarial poisoning. This precaution may maintain a power of resistance to the action of the malarial virus which will preserve the health of persons thus protected.

It may be that sufficient has now been said in regard to the various remote causes of disease, and, in conclusion, we are now prepared to speak of the possible vehicles by which these may be disseminated.

It would seem that the air might prove one of the most efficient of causes of the poisonous moles we have been considering, and no one seems ready to disprove this opinion. Indeed, the non-oxidized bases are volatile, and so need no vehicle other

than their own diffusive powers. Conine, obtained from the hemlock, and nicotine, obtained from the tobacco, are among those whose odors are very poisonous.

In the second place, water may be considered in this relation, as it is well known to be the most perfect solvent in all the realm of nature. It may be, nevertheless, that this very fact partially militates against its efficiency in this direction, for its very power as a dissolvent may cause so large a diffusion of the poison throughout large bodies of this all-but-mineral liquid that the poison thus diluted may be deprived of its power to do harm. There is one suggestion that is in place here, and that is, the fact that the infusoria and bacteria existing in such vast numbers in the water may be competent to convey the poison, as we have stated that the fluids of organic bodies possibly are even better solvents of organic compounds than water itself, whether pure or slightly impregnated with lime, soda, or other alkaline substances. Whatever view is taken, it is certainly very important to guard carefully the water supply of every human being.

In regard to portable objects, such as clothing, articles of commerce, cars and other public means of public conveyance, nothing need be said further than that common experience has now taken the question wholly out of the hands of the scientists.

Some attention has been given to the probability of the instrumentality of insects, birds and domestic animals in spreading disease, but this deserves more full development than it has as yet received.

"The Action of Highly Diluted Matter upon the Organic Cell:" Professor Schulz, of Griswald, has made a series of investigations to find what substances would increase the activity of yeast-cells above the normal. His results are remarkable. It is proven that such substances as corrosive sublimate, iodine, bromine, chromic acid, salicylic acid, formic acid, etc., in somewhat strong solutions (one per cent. is in most cases more than sufficient), destroy all vital activity in cells of different kinds, so that every process of fermentation is brought to a standstill by the addition of the above-named materials, which kill the specific yeast-cell. But it is also demonstrated that extremely dilute solutions of the above-named substances increase the vital energies beyond the normal on coming in contact with them. With iodine an increase of the cell-activity was attained when the dilution reached $\frac{1}{100000}$, and with bromine $\frac{1}{400000}$. In conclusion, Professor Schulz gives the following dictum: "Every irritant exercises an action upon the living cell, the effect upon the cell-activity being inversely proportional to the intensity of the irritation."

The discussion of this paper was participated in by Prof. Sayre, Dr. Bidwell, and Dr. King.

The last paper of the morning session was as follows:

ADULTERATION OF DRUGS AND DANGEROUS PROPRIETARY MEDICINES.

BY HON. H. W. SPANGLER, PERRY.

While the adulteration of food and drinks is bad enough and should receive our strongest condemnation, yet the adulteration of drugs and medicines is a far greater crime. If our pepper and sugar contains inert adulterations, we must use a larger quantity to produce the same effect; but if our drugs and medicines are adulterated, even if the adulterant should be inert and not injurious of itself, the strength of the medicine being weakened in proportion to the amount of the adulteration, the desired effect would not be obtained.

To enable the physician to intelligibly prescribe medicines, they should conform as nearly as possible to a fixed standard of strength; and any diminution of that medicinal strength, either by injurious impurities or inert matter, should be pun-

ished by severe penalties. While the adulteration of drugs and medicines is not as extensive as the adulteration of food, yet it is too frequent, and means should be taken to prevent as much as possible.

The various pharmaceutical associations and journals have been investigating this matter for several years. A writer in the *National Druggist*, vol. IX, No. 6, page 106, says that in the examination of ten samples of Kamala the amount of ash after combustion ranged from 11.97 per cent. to 60.22 per cent, when the ash should not exceed 8 per cent. Ten samples of Lupulin, which should not yield over 8 per cent. of ash, yielded from 9.11 per cent. to 21.7 per cent. Morphine pills labeled $\frac{1}{4}$ grain, eight contained $\frac{1}{8}$ grain each; one $\frac{23}{100}$ grain; one $\frac{1}{3}$ grain, and one correct, or $\frac{1}{4}$ grain of morphine. Seven salicylic acid pills labeled 20 grains, contained 24, 20, 20, 19, 17, 16.6 and 6.5 grains of acid respectively.

At the meeting of the Kansas State Pharmaceutical Association in 1882, Prof. G. E. Patrick, of the chair of Chemistry in the State University, reported that of three samples of potassium bromide examined by him, one contained 4 per cent. and two 8 per cent. of chlorides. At the meeting of 1887, Prof. Sayre, of the Kansas State School of Pharmacy, reported that of seven samples of cream of tartar obtained from groceries and examined by him, two were of officinal strength, and they did not exceed the limit of 4 per cent. of calcium tartrate, and although labeled "pure" contained only 50 per cent. of cream of tartar. Of thirteen samples obtained from drug stores, three were below and six just of officinal strength, and four contained less than 2 per cent. of calcium tartrate: one of these ranked quite high in purity, containing only one-half of one per cent. of calcium tartrate. At the meeting of 1888, H. L. Raymond reported syrups of iodide of iron that contained less than one-half the proper quantity of the iodide of iron, and more sugar than it should have contained.

A few years ago I ordered some yellow poplar bark, and a package was sent me labeled in small-caps "YELLOW POPLAR," and in small letters, "Populus Tremoloides." On examination, I found it to be the bark of the white poplar (*Populus tremoloides*), instead of yellow poplar (*Liriodendrum tulipifera*). It was evidently put up for the purpose of selling two different kinds of bark from the same package, as in olden times they drew two kinds of whisky from the same barrel.

About the same time I had a more serious case, because of its greater importance. I had ordered a pound of veratrum veride root. The package sent me was labeled in small-caps "WHITE HELLEBORE," and small letters, "Veratrum Veride." An examination proved it to be veratrum alba, instead of veratrum veride. Had I, without examination, made a tincture of it for veratrum veride, it would have been a very serious matter.

Probably, among the principal drugs, opium and cinchona bark and their preparations are more frequently of inferior quality than any other; but the introduction of good qualities of East India bark on the market of late years, and the fact that a number of reliable houses put up opium under a guaranty label, leave no excuse for a poor quality of either one if due care is observed in buying. The work of associations and journals in this direction has had good results, and the general quality of drugs is better to-day than it was a few years ago.

Another fraud in drugs we might call a fraud of the pocket-book. I cannot see any just reason why one house should put up a mixture of cocoa, celery, viburnum, and kola, which any pharmacist can compound, and charge from three to five prices for it. There is on the market and extensively advertised a purported preparation of pinus Canadensis (hemlock spruce), which sells for about four times the price of a standard fluid extract of the same kind. There are two kinds of this article sold—one dark, and the other white. All physicians know that the medicinal property

of the hemlock spruce is the tannin it contains. I have compared these preparations with a standard fluid extract, and find the dark proprietary article to be thicker than the standard extract, and it also has a slight taste and odor of wood tar, indicating that it had been overheated, or was the product of destructive distillation. The addition of solution of gelatine to the standard extract gave a heavy mass of precipitate, which appeared dense and opaque under the microscope, showing the presence of tannin in quantity. The addition of the gelatine solution to the proprietary article produced a dark flocculent precipitate, which appeared in flakes under the microscope, which indicates the presence of tannin which had undergone some change in the preparation of the article. Other tests for tannin gave similar results. On adding the solution of gelatine to the white preparation, a clear solution remained, which showed clear under the microscope, showing an entire absence of tannin. The addition of lead acetate to the white produced a large flocculent precipitate, indicating the presence of either potassium or ammonium. It also had a strong taste of zinc. On examination of the label I found that the label said that for certain reasons a certain amount of chemical pure sulphate of zinc and alum was added to the white separation. The addition of solution of ferro-cyanide of potassium produced a blue tint, and on adding a few drops of nitric acid to the "white pinus Canadensis," and then the ferro-cyanide solution, a strong, permanent blue color resulted, showing the presence of a ferrous iron salt. Here, then, we have what purports to be a preparation of pinus Canadensis, in which the medicinal property, tannin, is entirely absent, and containing instead thereof zinc and alum; and the presence of iron, showing that the alum is an impure article instead of the pure. Our conclusion is that this article is simply a solution of zinc and alum, which any druggist can put up for one-tenth of the cost of the proprietary article.

A more dangerous class yet is a class of proprietary medicines containing dangerous drugs in disguise. There is a class of medicines put up for the use of infants and children, sold under the various names of "Soothing Syrup," "Teething Cordial," etc., which is very pernicious. With my trade I have tried to discourage the use of one of these, that I had strong reason to think contained opium or morphine, and have recommended other preparations instead that I thought did not contain opium or morphine; but the demand was always, "I have Mrs. —'s Soothing Syrup; nothing else will do the work." I have advised my customers, if they would not consult a physician, and must have a medicine of this kind, to buy paregoric, Godfrey's cordial, Bateman's drops, or some such preparation, of which we know the exact composition, but there is a popular fear of or prejudice against anything into which opium is known to enter, and people will not use these preparations in which the quantity of opium is known, but instead will use an article in which the opium is hidden, (it being doubtful if even the makers know the quality,) and thus lay the foundation of the opium habit in early infancy. Numerous cases are on record of death resulting from the use of these secret infant remedies. If some one should sell you a beautiful bouquet, and he should intentionally conceal in it a venomous viper, which would steal out when you were admiring the beauties of the bouquet and, striking its fangs into one of your children, cause its death, you would prosecute that person for murder, and the courts would sentence him to be hanged or imprisoned. But people will dose the darling little babes with a medicine in which is hidden a deadly poison, which slowly and surely injures and kills it; and after the deadly work is done, they call for more of the same poison.

During the past few years many physicians have used, with apparent good effect in various nervous complaints, preparations of *avena sativa* (oats). A certain firm or company put up a preparation which they named "Scotch Oats Essence," and heralded it forth as a sure cure for alcoholism, the opium habit, and all nervous dis-

orders. It was observed that when a patient once commenced the use of it he had to continue in its use, and could not quit. They built up a very large trade in a short time. Dr. Eccles, of New York, analyzed this "Scotch Oats Essence" for the *Druggists' Circular*, and found it to contain a large amount of alcohol and quite a quantity of morphine. Here was a medicine recommended and sold for the purpose of curing drunkenness, but containing a large portion of alcohol; and the morphine slave was advised to take, as a cure of that terrible habit, this so-called medicine, which contained morphine as one of its principal constituents. After this expose by Dr. Eccles, this company put on their medicine a new wrapper, on which was printed a guaranty that the contents of the bottle contained no morphine. The patients on using the medicine in the new wrappers would come back and demand the medicine having the old wrapper, saying the new did them no good. This practically proved that Dr. Eccles's analysis was correct.

My attention has lately been called to a case in Leavenworth in which a physician had had a patient on a treatment of emulsion of cod-liver oil, using a brand that is very extensively advertised throughout the United States. After keeping the patient on the cod-liver oil emulsion for some time, he concluded to stop the cod liver oil treatment and put the patient on a tonic treatment. In a day or two the patient came to the physician and said he must have more cod-liver oil—that he could not get along without it. This effect indicates that the cod-liver oil emulsion contained opium or morphine.

A large portion of the cough syrups and emulsions advertised for lung troubles contains opium, and thus, unknown to the patient, puts him under the abject slavery of the opium habit.

The only way to effectually remedy this grave evil is by the strong arm of the law, and although national legislation by Congress will be necessary to fully control the evil, yet agitation by States must come before we can get Congress to take up the subject. This being the case, why should not Kansas—the State of which we all feel so proud; the State which, by striking the first blow at human slavery, made our nation a nation of free men; the State which, by her well-executed prohibitory laws, has shown to the world that statutory laws can protect mankind from the curse of the rum fiend—by additional laws enacted by her legislators, assist in protecting weak humanity from these secret poisons, and thus commence the warfare which will ultimately drive these poisonous vipers, under the guise of medicine, from our entire nation?

This paper was thoroughly discussed by Drs. King, Brown, Spangler, and Prof. Sayre.

At the close of the discussion, the convention adjourned till the afternoon session.

THIRD SESSION.

EMPORIA, Thursday, December 6, 1888—2 P. M.

The convention assembled promptly at the appointed hour. The first paper presented was as follows:

DRAINAGE AND SEWERAGE IN EMPORIA.

BY L. D. JACOBS, M. D., EMPORIA.

A question which confronts the citizens of Emporia, and to which, perhaps, little consideration has been given, but upon which decided action must sooner or later be taken, is that of drainage and sewerage. Neither our repugnance to expenditure

of money, nor our indifference to comfort and convenience, will long enable us to defer the subject. The accumulations of decomposing filth, in vaults, cesspools, drains, gutters, and saturated soil, like so many powder magazines are a menace to the community. They only need the spark of specific disease—the germs of cholera, typhoid, dysentery, diphtheria—and they become Borgias of destruction. Those who breathe the air or drink the water of their contamination sicken and die. This is no extravagant representation; and our healthfulness to-day is no guarantee of our healthfulness to-morrow.

In London the contents of a privy vault soaked into a well from which the people drank for months with impunity. A man suffering with cholera was brought to the house, and his dejections were thrown into the privy. Within three days afterward five hundred people who drank from the well were seized with cholera.

In 1880, in Newport, Rhode Island, (this case is from a report by Warring,) a family of children—the entire family—suddenly sickened and died with diphtheria. “The suddenness of the disease, and its fatality, were so alarming” that the mayor of the city employed the services of Colonel Warring, an expert sanitary engineer, to examine and ascertain, if possible, the cause of the disease. He found the drain-pipe opening into a leaching cesspool, which had not been touched for ten years. There were virtually no traps in the pipes, and the vilest gases flowed into the living-room. Besides this, out of the living-room there opened an ell, one room, through which was the back entrance to the house. Under this ell, which had no cellar, ran this drain-pipe on its way to the cesspool. The pipe had broken, and the filth oozed out and covered and permeated the seaweed packing that had been put over it to keep it from freezing in winter. With the first warm weather, deadly gases from the decomposition leaked out. The first one to sicken was the oldest child, her domestic duties keeping her at the sink, and the air she inhaled there, contaminated by the unhealthful sink, so weakened her that she went down first.

Flint, in his *Practice of Medicine*, gives an account of typhoid fever in a small village in western New York. The settlement consisted of nine families, closely grouped within an area of one hundred rods in diameter. In the center of the group was the tavern. “A stranger from New England, traveling in a stage-coach which passed through this settlement, had been ill for several days, and on his arriving at this stopping-place was unable to proceed further. Up to this time typhoid fever had never been known in that neighborhood. Within a month afterward forty-three out of the population of this settlement of nine families were affected with typhoid fever. Only one family escaped, and that was situated equally near as the others to the tavern. But what is remarkable, all of the families except the one that escaped, drank from the water of the tavern well. On account of a quarrel existing between this family and the tavern-keeper, they were forbidden the use of the well, and had, consequently, dug one of their own.”

In a paper by Dr. Bedford Brown, read at the thirty-ninth annual meeting of the American Medical Association, appears this: “A family residing in a most salubrious location on a mountain-top, with delightfully pure air, was attacked with exceedingly malignant dysentery. The presence of such a disease in such a locality created surprise, until it was discovered that a privy and a pigsty had been located in a situation from which drainage into a fountain of drinking-water was affected by every rainfall.”

But I need not quote from the medical literature, which is replete with incidents of this kind. We have them here in our city. I have at the present time a striking illustration in my own practice; a family of nine in this city, six of whom are afflicted with typhoid fever. Two were first attacked, and in a few days two others were taken down, then the father sickened, and finally the youngest child, an infant a

little over a year old. The family are intelligent people, cleanly and tidy, and comfortably situated. The sanitary condition of the premises was apparently excellent. But there was a cesspool which received the waste waters from the kitchen sink. The soil-pipe conveying this material passed near the cistern. An examination revealed a leakage in the pipe. The deep soil extending from this point was soaked by the escaping matter, and foul fluids found their way into the cistern, which contained the drinking-water for the family. The cement of the cistern, at the corresponding point, was cracked and covered with a film of decomposing organic matter.

To-day there are in our city a hundred cesspools—holes in the earth, sunk down to the gravel to receive the liquid wastes from the households; and the people, and the more respectable and intelligent people they are, congratulate themselves upon their conveniences! Ah, little do they dream of the danger that constantly surrounds them! Within these abominable recesses, silently but constantly, are proceeding the processes of decomposition and putrefaction which, like the sword of Damocles, are ever threatening the lives of their households. From these abominable recesses the polluted liquids are slowly but ever permeating the surrounding earth, gradually reaching out farther and farther to our wells, and stealing through crevices and soil to our cisterns.

In our city, from thirty to forty feet beneath the surface of the earth, is a stratum of sand and gravel. Immediately below this is found the water that supplies our wells. Think of the scores of cesspools, seething with pollution, in this gravel and sand! Think of the immense cesspools of certain hotels, of the hospital, and of the Santa Fé depot! While our city ordinances require that in the future all privies shall be built with boxes or earth-closets above the ground, yet there are in our city many hundreds of nasty vaults. When shall the time come—inevitably it must come unless we remove these evils, the history of hundreds of cities and towns evidence this fact—when shall the time come when our city is smitten with the calamity of a terrible epidemic?

"In London, about the middle of the sixteenth century, more than three thousand people perished in a single night from the plague, and during the succeeding ten years, in the same city, more than one hundred thousand died from the same cause; and these devastating scourges continued until the great city was purged by fire, and the abominable accumulations of filth consumed by devouring flames. A new system of building, of drainage, of sewerage and of water was adopted, and the deadly pestilence ceased to exist."

But come to the present age, and in our own country: Memphis had in fifty years no less than twenty-two epidemics of various diseases. "Her annual death-rate during non-epidemic years rarely fell below 35 to 1,000, and in her epidemics her mortality amounted to the appalling figures of 101 to 1,000." At length, when almost ruined by the scourges, she removed her vaults and cesspools and established a system of sewerage, and we hear no more of suffering Memphis.

Thus far we have escaped the evils of general contamination. We have never had an epidemic of disease of any kind.

Perhaps the nearest approach to an epidemic was in September, 1881, when in a certain locality five families were afflicted with malignant diphtheria. There were in all fifteen cases. These families were situated in close proximity to an open drain, into which was discharged the liquid sewage from a hotel. The drain became intolerably offensive from the stench evolved by the decomposing filth. But whether this was the cause of this local epidemic, I cannot say. The coincidence, however, is remarkable.

Naturally our city has no infirmities. On her natal day she was possessed in the fullest degree of the qualities essential to healthfulness—"pure air, pure water, and

pure soil." Situated on a high position, not flat but undulating, and uniformly sloping from her northern limits to the south, her soil is naturally dry and perfectly drained. The fall from Twelfth avenue (the northern limit of the old town-site) to the Cottonwood river is eighty feet, at the rate of one foot to the hundred. The slight depressions in the north part of the town converge to larger ones, which, as they proceed further, become ravines. There are four of these ravines, one in the east and one in the west part of town, and two in the central portions, one being on Congress and the other on Mechanic streets. Nor has our city in her growth—in the grading of her streets and in the erection of buildings and other improvements incident to her development—failed to maintain an adequate drainage. An inspection to-day will reveal the fact that, with a few exceptions, which ought to be corrected, and which can be with trifling expense, the surface-water of our city is completely carried away. It is to our natural condition that we owe a healthfulness which probably is not excelled by any city of equal population in the State. Our healthfulness in the future must largely depend upon the condition of our own creation.

In addition to vaults and cesspools, our soil is becoming saturated with household wastes. Our open drains are fed by the wastes of kitchen sinks and the liquids of laundries and bath-rooms. The ravines in the lower part of the city are disgusting in appearance and odor, on account of the putrefaction of organic matter discharged into them. The alleys in the business portion of the city are foul and constantly soaked with liquid wastes that are poured into them and the escaping fluids of privy boxes. Our city council has attempted by ordinances to prevent this condition, but in vain.

We have adopted a water system and have furnished no outlet for it. The waters of the Neosho are being pumped into our city to be charged with the exuviae of our persons and the organic filth of our households, and then allowed to filter through our soil or drain away through our gutters.

The sanitary formula enunciated by Hypocrates more than 2,000 years ago was: "Pure air, pure water, pure soil." In the ages that have since then come and gone, what worlds of pestilential ravages might have been saved to mankind had a proper observance of this prescription been maintained! We are not profiting by the experience of the past; on the other hand, we are begetting foul air, impure water, and filthy soil—the elements in which propagate the organisms of disease; in which the germs of typhoid, and dysentery, when they once enter, indefinitely multiply—the favorite haunts of the bacteria of consumption, diphtheria, scarlet fever, pneumonia; in short, probably of all acute diseases.

When General Butler occupied the city of New Orleans he was threatened by a more deadly foe than the Rebel forces which he had subdued. The yellow fever had made its appearance below the city, and his soldiers were unacclimated. The inhabitants of the conquered city were confident that an ally was soon to appear which would destroy the victorious Union troops, and the Union troops trembled in dread of the assault. Ten years before in this city, in the single month of August, 5,122 people died from the yellow fever, and from all diseases 7,000. How to save his army from this destructive malady was a momentous problem. In an article in a recent number of the *North American Review*, General Butler describes, in a most interesting manner, the methods which he adopted for the prevention of this dreadful disease. Eleven hundred men were employed to clean out the streets, "to dig out and scrape out all organic filth." "The ditches were hoed out and swept out and brushed out." The foul places were flushed, and the operations were repeated. "An order was issued requiring every household to clean up its areas and back yards to the acceptance of an inspector detailed from headquarters, and once in ten

days the yards were inspected and the most careful and stringent efforts were made to see that nothing of human or animal excrementitious matter should exist in the city, except under such circumstances as would make it harmless." People were forbidden to throw organic wastes in the streets, alleys, or open courts. Of course a quarantine was established to prevent the entrance of cases of fever, but notwithstanding this precaution, one man with the disease was admitted into the city and died there. But no new cases developed, and General Butler says that during his occupation of this city he was able to report a less mortality than existed in any other city of like population in the United States.

I have endeavored to present, as well as I could in as brief a paper as this is intended to be, the condition of our drainage and sewerage, and, from a sanitary view, the dangers that threaten us. I have likewise indicated the benefits which arise from sanitary regulations.

I have endeavored to show that our city is naturally healthy. If we are actuated by wisdom we will undoubtedly remove these dangers. We will empty the vaults and cesspools, disinfect them, and fill them with pure earth. We will cease depositing our liquid wastes in gutters, drains, and alleys, and will make proper disposition of all excrementitious matter. But how shall we be able to do this? There is only one practical method, and that is by an efficient sewerage system.

We have, as I said before, turned the waters of the Neosho into our city. All we need is to let this water pass in pipes to the Cottonwood, and thus become the carriage of all these wastes. The idea that sewage, in its discharge from its conduit, is abominably offensive, is erroneous. In an efficient system of sewerage the sewage is carried rapidly and completely through the pipes, and discharged before decomposition takes place. It is not like the contents of a privy-vault or a cess-pool, but, mingled with an abundance of water, its presence in the Cottonwood would scarcely be discernible.

The estimated cost of a system of sewerage, as estimated by Colonel Warring in 1881, to the city council, was, I believe, \$77,000. and \$27,000 for so much of the system as would apply to Commercial street, and two streets east and two west of it. Probably it would require \$80,000 to sewer the entire city. Can we afford it? The interest on this amount at 6 per cent. is \$4,800. Typhoid fever is endemic in our city. Every physician will testify to this. There are scores of cases annually. I will undertake to say that the expenses of this one disease alone in medical bills, nursing, extra labor, loss of time, wages, etc., will amount to a sum equal to \$4,800.

Of course with sewerage we will still probably have typhoid fever, but much of it would be prevented. And how much other disease would be prevented? How many lives might be saved? Who can estimate the saving of lives and health and money by an efficient system of sewerage?

There are other methods of disposing of sewage, but, with the abundance of our water supply, this is undoubtedly the most practicable; and should the discharge of sewage into the Cottonwood become objectionable, we may still, without disturbing our system, have an outlet by sub-irrigation.

Such a system of sewerage, with the addition of rigid regulations for the removal of garbage, would place our city in the best possible sanitary condition. In addition to health, it would add comfort and convenience to our homes, to our business houses, and our public institutions. It would increase the revenue of our water works, and make them self-supporting. It would add value to our property and increase our prosperity.

In our business we have been energetic and successful. We are a beautiful and prosperous city. We have comfortable and costly residences, heavy banks, fine hotels; we have elegant churches, school houses and colleges, and commodious and

expensive opera houses; we have a public library; we have daily papers; we have railroads and telegraph lines converging to us from every direction; we have gas, electric light, telephones, street railways, and water works; we have innumerable organizations for the pleasure and benefit and protection of our citizens; socially, morally, intellectually, commercially and professionally we are in the front rank; in short, we seem to have provided for everything, save only cleanliness and healthfulness. For them we have had no time: for them we have had no money.

How long shall we be indifferent to our sanitary needs? When our people shall realize the importance of the question, then will there be added to the numerous institutions¹ of our city, of which we are justly proud, an approved system of sanitation.

A lengthy and interesting discussion of this paper was participated in by Professors Stevens and Sayre, and Drs. Redden and Jacobs, and Mrs. Sperry, of Emporia.

On motion of Prof. Taylor, Dr. Jacobs was requested to furnish the city papers of Emporia a copy of his paper for publication for the interest and benefit of the city.

The following paper was then presented:

IMPURE MILK AS A CAUSE OF DISEASE.

BY W. A. WILLIAMSON, M.D., OF TOPEKA, COUNTY HEALTH OFFICER.

With the exception of the water supply, there is no subject more interesting to the sanitarian than the question of a pure milk supply. The mass of the people give little thought to the matter, being ignorant of its great power in the production of disease. Milk enters largely into the food of adults, and in children comprises nearly the whole diet.

Pure milk appears as a bluish white to white fluid, with a specific gravity of 1030, and the following composition:

Fat.....	3.20
Ash.....	.60
Sugar.....	4.40
Casein.....	4.30
Water.....	87.50
Total.....	100.00

Pure milk may be contaminated in many ways. Disease in the animal is often responsible for impurity. That a diseased milch cow may transmit the infectious germ to man, through the milk, is now well established; but of the disease so produced little is known, and much work is needed in this direction. Tuberculosis is a very common disease in cattle, named by the Germans *perl-schlucht*, or pearl disease. Affected animals have cough, fever, enlargement of glands in the neck. (These glands are almost identical in structure with those in human tuberculosis.) Animals fed on the milk from these cattle rapidly develop the disease. In 709 autopsies on children, 33 per cent. were found to have died of tuberculosis, the disease being most frequently found in the bowels.

It seems plausible to suppose that in the future the theory of transmission of tuberculosis by animals, in the milk or otherwise, will obtain more largely than that of heredity. In 1884 an epidemic of sore throat and red rash occurred in England, which in its symptoms closely resembled scarlatina. Investigation proved it to be in the route of one milkman. Examination of the cows furnishing the milk revealed the existence of foot-and-mouth disease. J. W. Strickler, New York, E. Klein, of

London, and others, after close investigation and experiment, believe the disease to be true scarlet fever, basing their belief on the following statistics, obtained two years after the epidemic:

1. Of 183 persons affected in the epidemic, none have since had scarlatina.
2. In eight affected families, those having previously had scarlatina remained unaffected.
3. Of the sixteen persons who had before had scarlatina, the throat epidemic was light.

Whether or not future investigation will prove the identity of scarlatina and foot-and-mouth disease, remains to be proven; but we have learned that the milk from such cows is highly poisonous, and capable of producing a severe disease.

In large cities, and especially those well supplied with breweries and distilleries, the question of swill-fed cattle becomes important. Animals so fed are kept continually housed in narrow, ill-ventilated sheds, the latter often in a filthy condition; the fermenting mass is also before them, and after a time the animals become accustomed to it, and gorge themselves upon it. Cows so fed soon show evidence of disease; ulcerations of the skin and udders appear; while the milk has a peculiar odor, readily recognized by inspectors. Instead of being natural or slightly acid, it becomes strongly so, coagulating in tough curds. When used, such milk produces different disorders of the gastro-intestinal tract, all more or less serious; many fatal cases in children have been traced to its use.

The following rules have been suggested, in order to maintain the health of the cow, and thereby secure a pure quality of milk:

1. Dairies should be frequently inspected by competent men, and all cattle showing evidence of disease should be isolated.

2. No milk should be used from a diseased animal.

3. Cows must not be fed on swill, or any kind of refuse food.

4. Cows should be allowed access to a full supply of pure fresh water.

5. The sheds and surroundings should be kept clean and well ventilated.

Having secured a supply of pure milk from healthy cows, the greatest care is necessary in keeping it so. Unclean and ulcerated udders contaminate milk with pus and blood, rendering it liable to rapid decomposition. The vessels in which the milk is drawn and shipped are often a fruitful cause of impurity. Crevices and corners may be allowed to fill with organic matter in which germs capable of fermentation may flourish, and rapidly increase. Again, the milk vessels are often washed in impure water, frequently from some stagnant pool in or near the barnyard; in this way the poison of malaria, diphtheria, typhoid and other diseases gains access to otherwise pure milk.

Adulteration of milk with water furnishes a ready source for the entrance of poisonous germs. If the water added were pure and healthful, there would be no danger; but too often, although pleasant to the eye, it contains germs of disease and fermentation. In smaller dairies the milk is carried into the kitchen, which often is the common living-room of the family, and may contain one or more persons suffering from diphtheria, scarlet fever, or measles. Milk, it is well known, absorbs germs and gases with rapidity, and when left standing in a room such as described, soon becomes loaded with poison. The dealer into whose hands this supply falls mixes it with more, and thus charged with disease and death it is distributed to scores of children. Numerous cases have been traced directly to this source, leaving no doubt as to the origin of the epidemic.

Vaughan, in 1883, discovered in milk and its products an alkaloid, which he named tyrotoxinon; this poison results from butyric acid or some other closely allied ferment. The germ producing it is not yet certainly determined. The

symptoms in a child resemble those of acute cholera infantum, and it is a question if all cases of *true* cholera infantum are not due to this poison. In a typical case of cholera infantum, the symptoms are suddenly developed, and produce the impression at once, on the attendant, of being caused by a powerful poison. The truth of Vaughan's results have been fully confirmed by German investigators.

In our own country many cases of poisoning, both in adults and children, have been traced back to milk or some of its preparations, containing the alkaloid tyrotoxin. In addition to the rules before given, Vaughan adds the following:

1. The milk must be at once thoroughly cooled, which may be done by placing the can in a spring of cold water or in ice-water, the water being the same depth as the can. The temperature should be reduced to 60°.

2. In summer, when ready for delivery, a refrigerator-can should be used, or the can kept covered with a cold cloth.

3. After the milk has been received by the consumers, it should be kept in a cool place, free from dust, and at a temperature not above 60°.

4. The only vessels in which milk should be kept are tin, glass, or porcelain, and these should be scalded after use.

In some Eastern cities the milk is drawn from the cow under antiseptic precautions, placed in sterilized jars, and so delivered to customers. If the precautions are carefully carried out, and the milk taken from healthy animals, its use will certainly be more satisfactory than of that drawn and transported under the old plan.

The people and officials of the larger cities are continually crying for pure water, at the same time utterly ignoring the question of a healthy milk-supply. More attention is needed in this matter; skilled inspectors should be appointed, provided with a lactometer, whose duty it should be to examine all milk—passing the good, condemning the bad. They should, at stated intervals, examine the cattle, their sheds, and surroundings. All animals affected with disease should be quarantined; those suffering from tuberculosis should be destroyed, their value being paid by the State.

The next paper read was as follows:

THE ICE AND MILK SUPPLY OF THE CITY OF EMPORIA.

BY CHAS. GARDINER, M.D., EMPORIA.

The ice supply of Emporia is taken from the Neosho and Cottonwood rivers. The Neosho is about a mile north of the city; it rises in Morris county, and flows by Council Grove, Dunlap, and Americus, before reaching Emporia. The north fork of the Cottonwood rises in Marion county, flowing southeast through the city of Marion to Florence, when it joins the south fork, which rises in Harvey county. Peabody is the only town of any size on the south fork. From Florence the river runs east by south, and is found a mile south of Emporia. None of the towns mentioned have a system of sewerage, and no large manufactories are located on any of these streams. Aside from the towns the water-shed is sparsely settled; some of it consists of cultivated land, but by far the larger part is virgin prairie. Along the rivers there is a belt of timber which affords shelter for cattle. The woods are used for feed-lots. For several years past large numbers of cattle and hogs have been shipped into this and adjoining counties, and fattened in the timber. If it were not for towns and feed-lots, we would have an almost ideal source for ice supply.

After dry seasons, when the feed-lots have not been washed by driving rains, and before the real winter sets in, they often have a decidedly unsavory odor. During epidemics of hog cholera, the dead hogs are left lying around or thrown into the river. When animals die from disease or accident, the bodies remain to be eaten by hogs and undergo the slow decomposition that takes place in cold weather. When

the river is closed by ice, the thaws and winter rains wash some of this mass into the river upon the ice, and it is kept by the next night's frost. In dry, cold weather, the gentle zephyrs for which Kansas is noted distribute dust, dirt and general debris upon the ice, where it remains, with other impurities, to be set free in our drinking-pitchers in summer.

In 1884 some of the ice had a putrid odor, and contained a large amount of organic impurities, consisting of parts of leaves of trees and plants, and grasses, and besides showed undoubted evidence of animal impurities. The bulk of the sediment was very large, compared with the amount of water. The water from that ice became putrid in three days in a bottle standing in a well-lighted room; it was full of microscopic life. Since the cattle business has declined, and fewer cattle and hogs are fed, the ice has improved in quality, and for the last two years has been free from odor and quite pure.

There seems to be a firm belief on the part of the people that ice somehow purifies itself during the process of freezing, and that it is safe to cut ice from polluted water. This is a great mistake. Ice made on foul water contains as many of those impurities as an equal quantity of water taken at the surface. Aside from the impurities transported by wind, water and animals, and deposited upon the ice, we know that under water, below frosts, growth and decomposition go on uninterruptedly, not so rapidly as in summer, but these processes never cease. The gases of decomposition are rising to the surface all the time. Little masses of fat—particles of organic matter made buoyant by retained or adhering bubbles of gas—rise to the surface; just as we see bubbles of air in the ice, so the bubbles of the gases of decomposing matter brought up by them are retained in the ice. Of course the heavy particles will sink, in still water, to the bottom of the stream. When the ice is made on the lee side of a pond or stream, all the floating weeds and other impurities will be driven to that side, and the ice, if frozen then, will contain all the particles that are on the surface. Nearly everyone has noticed the green scum that forms on the Neosho in summer, and how it is moved by the wind; one day it will be above the bridge, and the next below. These little plants are rotting on the bottom of the river now, and sometimes their leaves can be found in the ice.

Experiments made by freezing salt water, and then showing that the ice contains less salt than the water, are of no value, because the conditions are not the same as when ice is freezing on polluted water. If I throw some shot and small pieces of cork on water, and then freeze the water, the ice will not contain any of the shot, but all of the cork. How would it sound to say that ice when forming can purify itself from shot, but cannot from cork? This is an extreme illustration, but it throws light on the point at issue.

I have examined ice made on sewage, and a quart of that water contained as many impurities as a quart of the sewage taken at the surface where the ice was made. I am certain on this point, notwithstanding that some high authorities make a different statement. Ice cut from polluted water has been known to produce an epidemic of dysentery, as in the well-known cases at Rye Beach. There are several well-authenticated cases where typhoid fever has followed the use of contaminated ice. The following is a case in point: A gentleman built a fine country residence, using every precaution to secure a dry, healthy site. The ground was tiled, and the most approved kind of plumbing work put in. His family went to the seashore, but he preferred to spend his summer at his new home, where he could have rest and quiet and oversee the improvement of his grounds. In a few months he was taken with typhoid fever and died. A thorough examination of the house and grounds was made, but no cause could be found to account for the disease. It was stated

that he drank a great deal of ice-water, often using the melted ice. This clue was followed, and it was discovered that the summer before three cases of typhoid fever had occurred among his workmen, and that the stools of the typhoid patients had been thrown into drains emptying into a small pond. The ice-house was filled from this pond. The person who used the ice to excess had typhoid fever, but no one else about the place suffered.

Freezing does not kill all disease germs; it retards their growth, but they may retain their vitality for years in the center of a block of ice. Spores may live indefinitely at a temperature far below the freezing-point, and when set free will begin to divide and subdivide, producing germs as rapidly as if they had not been kept in ice. The possibility of ice carrying the germs of disease must not be lost sight of.

The effects of contaminated ice do not always show in outbreaks of fever or dysentery or cholera. There may be a condition of chronic poisoning, a general impairment of health, and a gradual waning of all the powers of life that medicines are powerless to relieve so long as the cause is present and active. Even pure ice, if used to excess, may cause disease by reducing the temperature of the stomach below the point necessary for digestion. An increased flow of blood is required to overcome the chilling effect of the ice-water, and this may result in congestion of the stomach. In the meantime digestion is at a standstill, and during the time the food may undergo changes that render digestion more difficult. These causes acting and reacting may make congestion habitual, and so lay the foundation of functional and organic disease. There is a determination of blood to the stomach during digestion. This natural process is distributed and an abnormal condition which results in disease is established. The effect of cold on the solar plexus of nerves plays an important part.

We are sometimes asked: If there are so many causes of disease, why don't everybody die? Before anyone can have a disease, two things are necessary: first, that the person is susceptible to the disease; second, that the exciting cause of the disease is present, and can act upon the individual.

If a person who has had small-pox is exposed to that disease, he is almost sure to escape, because one attack makes such changes in the system that the susceptibility is lost. If a susceptible person is exposed to the contagion of small-pox he is almost sure to take the disease. If a person has a predisposition to dyspepsia, and lives in such a way as to increase that tendency, he will surely suffer from it. That most people can drink ice-water without any signs of disease, or that some can drink the water from melted ice, as I have known them to do in Emporia, without harm, does not prove that the practice is without danger. Of the many men engaged in battle, thousands escape unhurt, but no one will say that a battle is a safe place.

During our long, hot summer, ice is almost a necessity to keep food and to cool drink. When we remember that ice may be so contaminated as to cause serious disease and death, prudence would demand the use of water-coolers so made that ice is kept in a separate chamber.

Our supply of milk comes from two sources. About two hundred milch cows are owned and kept in town. During the summer, the cows are driven to pasture every morning and returned at night by men who contract to run the town herd. They hire boys, who fulfill the *running* part of the contract in the most thorough and faithful manner. If Gray could have seen the town herd come home, he would have been roused from his twilight musings, and could never have written: "The lowing herd winds slowly o'er the lea." The pastures have a heavy growth of wild grass, rich in nutriment, and noted for its fattening quality. Sometimes weeds impart

their odor and taste to the milk, but as a rule this happens only in the early spring, when the cows are first turned out and are hungry for green food. Some pastures have wells and windmills that furnish an abundant supply of good water. In others, the cows have access to the river or are driven there for drink. Several pastures contain stock-water; this consists of rain collected in the draws, where it forms ponds, often of considerable size. Dams are built across the draws to make ponds, or increase the size of those already existing. When there is a good body of water, so that it can be acted upon by the sun and wind, it remains in good condition, and answers fairly well for the use of cattle. When shallow pools of stagnant water are exposed to the fierce heat of the summer sun, and mixed with the various organic and other impurities washed in by rains, borne by the winds, and carried by animals, it requires but a short time to produce a slimy, putrid ooze, full of the bacteria of putrefaction, and a fit breeding-ground for disease. Such pools need only the chance sowing of morbid germs to become centers of infection, from which death may go out in every direction.

Pure air, pure food and pure water are essential to health; this is the trinity of sanitary science. Cows that are compelled or allowed to drink such liquid filth lack one of the essentials of health. No animal can make pure blood or pure milk from such drink. Laws are passed to prohibit the sale of milk from distillery-fed cows, but their food consists of sour, fermented grains, clean compared with these shallow, slimy, stagnant pools. The lack of shade in many of the pastures and the rapid drying or absence of dew makes a supply of good water more necessary than it would be under other circumstances. When cows are driven hard and exposed all day to the sun without water, they become so thirsty that they will drink any liquid they may find, and surely such cows are not in a condition to furnish wholesome milk. The use of such milk has caused tears to fall, little shrouds to be fashioned, little graves to be dug, and has left in poor human hearts voids so vast that only Infinite compassion could fill.

When the grass fails, the cows are kept in town in the yards and barns of their owners. As a rule, they have good food, water, and shelter. Many of them supply several families with milk. These cows furnish about twelve hundred quarts a day. In most cases the milk reaches the consumer warm from the cow. About eight hundred quarts a day are brought in by milkmen. The dairies are located in the suburbs, and the cows are practically kept under similar conditions as the town herd. I visited some of the dairy farms, and saw none but healthy animals. Most of the year, the milkmen make two trips a day, and in some cases the milk is warm when delivered. I procured samples of milk from the different wagons, the owner not knowing that I was the purchaser, and made the following examination: Color, odor, taste, reaction, specific gravity of the fresh milk, percentage of cream by bulk, specific gravity of skimmed milk, microscopic examination of sediment. In each case the same quantity of milk was examined, and all the conditions as nearly alike as possible. The color and reaction were normal in all. One specimen had the cow odor; two had the cow taste. The specific gravity of the fresh milk varied from 1031, the best, to 1026, the poorest. The cream varied from $11\frac{1}{2}$ to 8 per cent. The specific gravity of the skimmed milk varied from 1032 to 1027. Of the samples showing a specific gravity of 1026, three specimens were taken but the result was unchanged. Either the cows gave very poor milk or 10 per cent. of water stuck to the cans. Unadulterated milk may range from 1032 to 1028, with cream from 12 to 10 per cent. Below 1028 means water. Sometimes water is added, sometimes cream is abstracted; sometimes we have both addition and subtraction. The sediment was slight, and was not present in all the samples. It presented a dark appearance to the eye, and consisted of dust and dirt from the hay and cows; in one case, little

masses of carbon, probably soot from soft coal. This could be avoided by greater cleanliness in the care of the cows, more thorough straining into closed vessels that would exclude the dust and odors of the barn. The cans should be thoroughly clean, and in hot weather it would be well to have them covered with canvas wet in cold water; and if they were sheltered from the sun, so much the better.

Milk may be pure and wholesome when delivered, but under certain conditions it may become unfit for food. When the air is highly charged with electricity, milk may sour in a short time, or it may be received into vessels that retain some particles of decomposing matter that soon sets up putrefactive changes. Milk should be kept in a cool place, free from tainted air and foul odors. This would exclude some refrigerators.

This paper was discussed by Drs. Brown and Welch.

On motion of Prof. Sayre, the State Board of Health was requested to adopt some standard for the analysis of milk, similar to the one adopted by the Massachusetts State Board of Health.

The last paper of this session was as follows :

SEWAGE DISPOSAL.

BY W. L. SCHENCK, M.D., OSAGE CITY, MEMBER OF STATE BOARD OF HEALTH.

Though our subject may not seem to exhale the redolence of the garden and orchard, it is laden with the latent perfume of hyacinth and tuberose, of strawberry and peach, of clover and corn; and its importance to life and health is immeasurable. Sewage is any refuse matter obnoxious in itself, or capable of becoming a source of discomfort or disease. While its injurious results are usually in direct ratio with its accumulation, the smallest particle containing a septic poison is capable of creating a most frightful epidemic.

Wherever there is life, there is waste. Wherever there is waste, there is sewage. While no created atom can perish, change is the changeless law of nature. The tissues of our bodies are continually changing, and the atoms eliminated by animals nourish plant-life, which in turn exhales oxygen and stores up force in fruit and grain and fuel for the benefit of animal life. Every change perfected tends to progress, and only becomes harmful under malign influences. Civilization crowds animal life and prevents free exchange; it creates accumulations that it must provide against or suffer. But civilization is better than savagery, and is equal to every emergency it creates. Selfishness and greed are its only obstacles, and any community ruled by these sows to the wind and reaps the whirlwind. As well expect a healthy body when lungs and liver and kidneys are clogged, and refuse matter prevented exit through these emunctories, as a healthy home, city or village whose various filth is retained within its purlieus.

The world in general is very like the 'Squire in Robert Elsmere. It may think it has no interest in pigsties, and cesspools, and sewage, but let it see the squalor, hear the cry and know the suffering that a little effort may relieve, and the human heart, whether in the man of letters or the millionaire, the councilman or the legislator, will expand, and the purse-strings will relax.

Failure to remove or the improper disposal of sewage is not only detrimental to the vital interests of the State, but as well to its commercial prosperity. Baron Liebig says: "Every living being produces in its offal the manurial ingredients, both quantitative and qualitative, required for reproducing the means of sustaining its life. It is a law of the circuit of atoms, each playing a part in a long-stretched series of acts of nature, serving consecutively various purposes, and beginning the series anew each time the circuit is completed. Thus the dung of cattle contains all the

fertilizing properties needed for growing their food, while that of carnivorous animals supplies the manure for producing the food of the creatures on which they prey; and so it is with every living being, including man, hence it is unquestionable that the nitrogen, phosphoric acid, phosphorus, potash and other organic or inorganic matters contained in the excreted sewage of cities will suffice for producing for the people it is derived from."

Give scientific sanitarians proper encouragement and enforce their advances by efficient laws, and Hygiea will keep step with civilization, and its various waste will be utilized in its interests.

The scientific disposal of sewage involves:

1. The prompt removal of all organic matter whose presence or decomposition is detrimental to health or offensive to the senses.

2. Its removal by methods that shall prevent its contaminating either the air, earth, or water.

3. Its removal in such manner and to such place as will prevent its subjecting others to inconvenience or injury.

4. Its removal, when practicable, in such manner as will preserve for agricultural purposes whatever it contains of manurial value.

It is too well known to require argument, that sewage accumulating about our homes or in our villages and cities is the source of a large proportion of the diseases that destroy mankind, and that garbage-piles, cesspools and privies are often as offensive to the senses as they are injurious to life. Cholera and typhoid fever are born and disseminated through human excrement. Diphtheria and scarlet fever are generated in decomposing animal matter. Yellow fever and small-pox, if not the product of filth, find their hot-beds in its accumulations. All diseases and injuries, whatever their cause, are aggravated by its presence. Filth contamination is not confined to centers of population, but may occur as well in isolated homes. Every country practitioner can probably recall cases like the following, taken from my own experience:

Robert M—, a well-to-do farmer, with a family of more than ordinary culture, was living near the summit of the highest ground in the neighborhood. His house, well constructed and well kept, was built on the north slope; the lower story, used as cellar and milk-room, was built in the hill out of which ran a crystal stream, which, after winding about the milk-room, danced away down the slope. This stream furnished a seemingly pure drinking-water for the family. Without other disease of the same type in the neighborhood, one after another of the members of this family went to death's door with typhoid fever. In seeking its cause, it was found that the privy vault, one hundred yards away and higher up the hill, had filtered its contents into the subterranean stream that supplied the drinking-water.

The family of Levi B—, living on the top of a healthy Kansas divide, had diphtheria, of which three of the children died. Called in consultation, I sought the cause of the disease. There had been no other cases in the neighborhood; the children had not been from home; all the surroundings were hygienic. The well, situated near the corral, not furnishing sufficient water for the stock and family, and being suspected of contamination from the stock yard, water for family use was brought from a well in a deep ravine, half a mile away. On examination, this well was found to be only a few feet in depth, and a very short distance below an old cattle pen and stable yard that contained the accumulations of several years. No other family used this water; no other had diphtheria, and no new case occurred in the family of B—, after its use was discontinued.

Whether we live in city or country, or however healthful our surroundings, ingesta

poisoned with sewage will poison as surely as though it contained arsenic or strychnia.

As the preservation of life and health is the first duty of the citizen and the State, and as sewage accumulation is the efficient cause of disease and death, the individual citizen should understand its dangers, and the State should make ample provision, with sufficient penalties to secure enforcement, for its removal from all centers of population, in such manner and to such place as shall prevent its becoming a nuisance; and this should be done at whatever cost. Recognizing this fact, nearly all the large cities of christendom have adopted some system of sewerage, and nearly all the systems now in use are what are known as "water-carriage." These involve the necessity of a contiguous stream, or tide-water, able to furnish an abundant supply of water for flushing, and to carry away the sewage when discharged. They consist of tributary drains leading to the sewers, and sewers leading to the sea or running streams. They involve the necessity of removing the sewage as fast as it is deposited, and a sufficient quantity of water to fill the pipes and so prevent adhering masses from becoming the nidus of disease. Very few cities where water-carriage is used have an adequate supply of water, and flushing at definite or indefinite periods involves accumulation and decomposition, clogging, and the escape of noxious gases through traps, water-closets, ventilating and man-holes, with leaking and bursting of the sewers. When all the conditions for the removal of the sewage by this method are as perfect as possible, the filth is emptied into convenient streams, destroying the life they contain, making noxious deposits upon their shores, and carrying contamination and disease to all to whom they flow. Various distances, from a few yards to miles, have been designated as the boundaries of contamination in these streams. The only limit to their carriage of the germs of disease that sewage may and does contain, is their length.*

Take an example of water-carriage. The Kaw is perhaps the best stream in this State for that purpose. At Topeka they take their water from this stream, a short distance below where it receives the sewage of the Central Asylum. After going through the sewers, loaded with their filth, it is poured back into the river for the benefit of those living farther down the stream. Let us calculate how great that benefit is. Each individual furnishes daily, in round numbers, an average of 40 oz. of urine, 3 oz. of fecal matter, $7\frac{1}{2}$ oz. of house and kitchen waste, and 5 gallons of household waters. A special commission of sanitary experts, consisting of Messrs. Royers, Devaugh, and Putzeys, in a report to the Royal Society of Belgium, estimated that for each 1,000 of people there will be per man:

34 cubic meters (tons) of fecal matter.	
428 " " " urine.	
90 " " " house waste.	
7,300 " " " solid waters.	

Or 17,275 pounds for each individual.

Suppose Topeka has a population of 100,000, which she expects in the near future, and that the sewer-pipes reach every house, as they do in all efficient sewerage, then she will discharge in the Kaw annually:

3,400 cubic meters (tons) of fecal matter.	
42,800 " " " urine.	
9,000 " " " house waste.	
730,000 " " " solid waters.	

How long can the little river, or the people along its banks, stand such pollution?

*First Report Com. River Thames, vol. 11, p. 49. Special Investigation by the Rivers Pollution Commission, appointed by the Queen of England, 1868.

How long before this system of sewage-carriage and disposal must be changed? and is it not wiser to adopt a proper system now, than to change it by-and-by at double cost?

If water-carriage is attempted without some stream as a receptacle of the sewage, it must be emptied upon the land, converted into solid manure, or cremated. If emptied upon the land even in a purified condition, with separate drains to carry away surface or storm-water (and drainage and sewerage should always be separate), it is only a question of time when the sewer discharge will destroy the porosity of the soil, preventing its oxidation, and rendering it noisome and barren, instead of healthful and fertile.

On a small scale, as at the Asylum for Imbecile and Idiotic Youth, at Winfield, where the sewage is now discharged on the side-hill, a few rods from the building, the field adjoining the sewer-opening, properly prepared with a liberal use of drainage tile, might appropriate the refuse, and its cultivation furnish employment for the boys. But such a disposal of sewage on a large scale, either from a hygienic or agricultural standpoint, is wholly impracticable. If converted into solid manure by any process, the quantity of water required to carry it on hygienic principles will destroy its manurial value, which is lost in proportion to the amount of washing it receives. While cremation purifies as by fire, cremators are not equal to the sewage of any considerable city.

If the water supply was equal to cleansing the sewers and carrying away the waste; if no harm was done to the streams or the land, or if the manurial value of the sewage was not destroyed, water-carriage would not meet the demands of scientific hygiene. Unseen leakages are constantly liable to pollute air, earth, and water, and with any system of traps yet devised there is constant danger from the escape of noxious gases. Yet sewers, with all the defects of water-carriage, wherever introduced and maintained *secundum artem*, have greatly lessened the prevalence of disease and the death-rate. Pettenkofer, one of the best sanitarians in Europe, in a report made to the sanitary congress held at Vienna, gives many statistics evidencing this fact. We quote one or two.

At Munich, the enteric (typhoid) fever mortality per 100,000 of inhabitants per quinquennial period was:

1854 to 1859, when there were no regulations for keeping the soil clean.....	24.2
1860 to 1865, when reforms were begun by cementing the sides and bottoms of porous-pits.....	16.8
1866 to 1873, when there was partial sewerage.....	13.3
1876 to 1880, when sewerage was complete.....	8.7

At Dantzic, the deaths from enteric fever per 100,000 were:

1865 to 1869, when there was no sewerage and no proper water-supply.....	108
1871 to 1875, after the introduction of water-supply.....	90
1876 to 1880, after the introduction of sewers.....	18

But cities with sewers, especially where there is the combined water-carriage and sewage, however perfect, still suffer sadly from typhoid fever, scarlet fever, diphtheria, and other zymotic diseases. Thus, in Paris, typhoid fever destroys about 1,000 people annually; and in London, where the system exists in greatest perfection, it fouls both air and water to such an extent, that propositions for a change are seriously discussed. Neither science nor experience approves the disposal of sewage by water-carriage.

Scientific sanitation demands the removal of excrementitious matters by conveyance *in vacuo* through *air-tight metallic pipes*. The conception of the *pneumatic system*, the removal of sewage through suction at the point of discharge, is in accord with both the demands of hygiene and the interests of agriculture. When perfected,

the end of improvement in this direction would seem to be attained. It removes promptly and rapidly all sewage matter emptied into the pipes without the possibility of any escape, solid, liquid, or gaseous. Should openings occur in the pipes, the only result would be the *drawing into them* the medium by which they were surrounded, and so render contamination by their contents impossible. By this method sewage can easily be carried any desirable distance from the city, and the miasm and odor of its gases destroyed by fire, while the sewage undiluted by waste or other waters may economically be converted into a dry manure of great commercial value.

Sanitarians all agree with Pasteur: "It would be well not to mix fœcal waste with sewage-water," while utilitarians submit to the voice of experience. "The sewers of Rome absorbed the entire welfare of the Roman peasant, when the Campagna of Rome was ruined by the Roman drains, Rome exhausted Italy, and when it had placed Italy in its cloaca, it poured into it Sicily and then Sardinia, then Africa. The sewers of Rome swallowed up the world. Its cloaca offered its maw to the city and the world. Eternal city—unfathomable sewer."—*Liebig*.

Victor Hugo, in his last volume of *Les Misérables*, awakened a new interest in France and the world in sewage disposal and sewage waste. He says, p. 64, *Jean Val Jean, Carlton*: "Paris throws five millions a year into the sea. . . . By means of what organ? Its intestine, its sewer. . . . Science, after long experiment, now knows that the most fertilizing and the most effective of manures is that of man. The Chinese, we must say to our shame, knew it before us. No Chinese peasant, Eckburg tells us, goes to the city without carrying back at the two ends of his bamboo two buckets of what we call filth. Thanks to human fertilization, the earth in China is still as young as in the days of Abraham. We fit out convoys of ships, at great expense, to gather up at the south pole the droppings of petrels and penguins, and the incalculable element of wealth we have under our own hand we send to the sea. All the human and animal manure which the world loses, restored to the land instead of being thrown into the water, would suffice to nourish the world. . . . These heaps of garbage at the corners of the stone blocks, these tumbrils of mire jolting through the streets at night, these horrid scavenger's carts, these fetid streams of subterranean slime which the pavement hides from you: do you know what all this is? It is the flowing meadow, it is the green grass, it is marjoram and thyme and sage, it is game, it is cattle, the satisfied low of the huge ox at even-tide, it is perfumed hay, it is golden corn, it is health, it is joy, it is life. Thus wills that mysterious Providence which is transformation upon earth and transfiguration in heaven. . . . The very substance of the people which is carried away, here drop by drop, there in floods, by the wretched vomiting of our sewers into the rivers, and the gigantic collection of our rivers into the ocean. From this, two results—the land impoverished, the water infected. Hunger rising from the furrow, and disease from the river."

Through the never-resting, never-ending changes and compensations of nature, sewage to soil, soil to flower, fruit and grain, vegetable to animal, and again, "earth to earth, and dust to dust." Infinite wisdom designed the earth should be kept as new and strong as when Adam dwelt in Paradise.

From both sanitary and utilitarian standpoints, the pneumatic system is a long step forward in the solution of the great problem of sewage disposal—disposal *in vacuo*, and in a concentrated form, readily converted into poudrette by a force applied at the point of exit. Several systems have been invented—the Liernier, Shone, Berlier, and Marquand. The Berlier has been quite extensively applied in Paris and elsewhere, and favorably reported on by many of the most distinguished sanitarians of Europe. Though the pneumatic is yet in its infancy and quite imperfect,

American ingenuity, encouraged in this direction as Europe encourages sanitary improvement, will make it all that can be desired.

But a large proportion of the cities and villages of the world, and even of Kansas, where "booms" are apt to consider cost a secondary matter, are not able to maintain any system of sewers. Few places in this State have sufficient water to keep sewage moving, and no river in or adjoining the State, except the Missouri, can bear sewage contamination. The only proper system of sewage disposal for the large cities of Kansas is the pneumatic system. But what shall the smaller cities and villages do? Wherever there is population there is human waste, against which human health and life must be protected. No home is so isolated that it can escape the consequences of an improper disposal of sewage. Though all the surroundings are as pure and balmy as the Elysian fields, if sewage contaminates our air, water or food, the penalty is disease and death.

Every hamlet and village should possess the knowledge and the means that shall enable them to make proper disposal of their garbage and excreta. How many of the towns of Kansas that are advertising themselves by water works, and electric lights, and street railroads, and sundry and numerous "plants," are making any systematic or scientific effort to protect the noses, the stomachs, the lungs, the health and lives of their citizens against stinking privies and macerating garbage-heaps? A year or two ago I asked a gentleman in a booming town: "What are you doing in the way of sanitation?" "Nothing; we need nothing. The river flows a few feet beneath the city with as strong a current as in its bed," was his reply. "What then," I asked, "if your neighbor's vault is a few feet above your well?" "Perfectly healthy, perfectly healthy," he said. "Perhaps," I replied; "but not very appetizing." What city or town in the State that is without sewers, is making systematic or scientific efforts to protect itself against its excrementitious and other waste, and what can and should be done in this direction by every city and town?

The means of sewage disposal other than by sewers are numerous and varied. The earliest recorded plan, directed for a nomadic people, by the great Jewish sanitarian, 1450 years B. C., was: "And thou shalt have a place without the camp whither thou shalt go abroad; and thou shalt have a paddle upon thy weapon; and it shall be, when thou shalt ease thyself abroad, thou shalt dig therewith, and shalt turn back and cover that which cometh from thee." (Deut. 23: 12, 13.) When practicable, this is the perfection of sanitation—deposited in small quantity, covered promptly with a disinfecting and deodorizing material, and returned to enrich Mother Earth. All civilized people have, after a fashion, followed the injunction of Moses, but in the main as Peter followed the Master—"afar off."

The most common mode of the disposal of excrementitious matter is the most objectionable. A pit is dug a few feet or yards from the home, (perhaps it is walled—possibly it is cemented,) and into this is deposited the excrement of the family, not covered each time, as Moses commanded, with earth; rarely covered with anything, except, perhaps, an occasional bucket of garbage. Week after week and month after month, the noisome contents accumulate, with no thought of cleansing, until at last, like the stable into which the owner could no longer get his horse, it is moved to some other spot; but not until it has polluted the air, saturated the soil, through which, if porous, it has found its way to the veins that connect with the spring or well, or, if in Kansas, during the dry season the contents have found their way through fissures in the earth to some spring or well, and at flood-time overflowed and spread their foulness far and near, and the people have wondered that they had typhoid fever, diphtheria, scarlet fever, etc. A few years ago the lower portions of Osage City suffered severely from typhoid fever, consequent upon the overflow of privies; and during the dry autumn of 1886 the same disease was endemic in the

northeastern portion of the town, commencing at a house that had no privy and used no "paddle." The fecal matter deposited on the ground soon dried, and was carried upon the wings of Kansas zephyrs to the noses and mouths of those along their track, marking the pathway of the disease as clearly as when carried by sewer or water-course.

A glance at the history or philosophy of sinks, or the absence of any provision for the disposal of sewage, shows the necessity of proper provision. When the most approved sinks, laid in solid masonry and properly cemented, are used, and their cleansing is left to individual judgment, ignorance or penury permit accumulations that are dangerous to their owner and the community. Their decompositions constantly engender gases both noisome and pestilential. You may adopt the most approved method of ventilating your house, but with such a vault in your neighborhood the more you ventilate the worse for all concerned. How many people in every city, village, or even country neighborhood, have been compelled to shut out the foul odors from an adjacent yard by closing every avenue against the admission of air. Yet a room loaded with worn-out animal tissues exhaled by the lungs or discharged through the skin, may be a more important field for sewage disposal than where contamination occurs in the boundless air outside. Foul odors, though always disgusting, are not always dangerous, and yet may be ranked among nature's danger-signals.

Cleansing privy vaults of whatever construction, unless properly done will always prove a nuisance, snare and fraud, and will only be done economically, systematically and efficiently in cities and villages by the corporation. The proper removal of night-soil is of vital importance to the public, and the time is at hand when every incorporated village and city will consider it as much a public duty and a public expense as if they were sewered cities. Where no sewers exist, various modes of receiving, disinfecting and disposing of sewage have been adopted, such as Moule's dry-earth closet, the Manchester and Rockdale system, etc.—all aiming at a prompt disinfection and deodorization of deposits by charcoal, ashes, earth, lime, or other material, a proper receptacle, easy of removal. We would call special attention to "*A new system of sewage disposal*," by Dr. C. W. Chancellor, of Baltimore, Md., and advise all who are interested in the subject (and that should be *everybody*) to send to Dr. C., inclosing ten cents for postage, for his exhaustive report on "Improved Methods of Sewage Disposal." The Maryland State Board of Health, with the approval of his Excellency Gov. Lloyd, sent the Doctor to Europe, where he examined the various systems of disposal and utilization of sewage in use in England, Germany, France, Belgium and Holland; and this pamphlet is the result of his investigation. Whatever system of sewage disposal is adopted by any town or city, to be efficient must be systematic and thorough. Though the general condition may be good, the nidus of disease located here and there is sufficient to inoculate the whole city and start into being the most frightful epidemics. If sewers are adopted, whether operated by water-carriage or pneumatic force, they must reach every place where sewage exists; they must be constant in their operation and kept thoroughly cleansed, and their discharge must be disposed of in such manner as will prevent injury to others. If vaults are used, they must be kept deodorized, disinfected, and emptied regularly and *in vacuo*.

Whether privy contents are received in tanks, barrels, boxes, or other receptacles, they will never be kept in sanitary condition, if left to individual vigilance, intelligence, and energy, as in every center of population there are plenty of people without these virtues, but, if possessed by all, the purification of a city is as much a public interest and duty as making provision for extinguishing fire, and constructing water works, sewers, etc. Every incorporated city and village should make

proper arrangement for the disposal of its sewage. Suppose each householder is required by law to remove his own sewage, and obeys the law. His vault or box should be emptied fortnightly during June, July, August, and September, and every four weeks during the remainder of the year. The common charge by individuals hired for such services is \$1, and the cost to the householder would be \$8 for four months, and \$9 for the other 243 days in the year, or \$17 each year, and the work would rarely be well done. In a city with a population of 5,000 there would be probably 1,000 homes, and the cost of sewage removal, attempted by individuals, would be \$17,000 per annum. Four, possibly two, city scavengers, with proper receptacles and carts, at \$3 each per day, or \$1,000 per year, would do the same work systematically and efficiently, with a saving to the city of from \$13,000 to \$15,000. There is no tax any people can better afford to pay than that which will add to their comfort, health, and life. There is no city or village that can afford to neglect the proper disposal of its sewage, cost what it may. There is no village or city that cannot easily afford some such simple and economical arrangement for the disposal of its sewage as the following, emptied systematically at the expense of the city, its officers being responsible for the manner in which it is done, and it will be a great sanitary advance for a large number of the villages and cities of Kansas:

Let the commode on every lot be erected fifteen inches from the alley; let the box extend to the line of the alley, and as far under the commode as required, say eighteen inches, and be raised high enough from the ground to prevent any offensive accumulations beneath it, and let it be made water-tight and coated within and without with hot coal-tar. Let there be a close-fitting cover, on hinges or removable, over the projecting part of the box. Let there be close covers to the openings in the seats, and a pipe extending from beneath the seat to a proper distance above the roof. Place in the commode a box containing dry earth, ashes, lime, or charcoal, well pulverized, and a small shovel. Inscribe over the box the injunction of Moses, "*Turn back and cover that which cometh from thee.*" Privy contents thus treated will be dry and inodorous, and their manurial value equal to the cost of their removal. *Let them be emptied by the corporation.*

One thought more: Railroads should be required to keep their "water-closets" pure, and to deposit their contents where they will do no harm.

A very earnest and instructive discussion followed this paper, by Gen. Kellogg, Drs. Jones, Wright, Brown, and Prof. Sayre.

The convention then adjourned until the evening session.

FOURTH SESSION.

EMPORIA, Thursday, December 6, 1888—7:30 P. M.

The convention was called to order by Vice-President Spangler. On motion, it was resolved that there should be no discussion of any of the papers, in consequence of the number of papers and the time they would necessarily occupy.

The first paper presented was as follows:

THE DIVINITY OF SANITATION.

BY GEN. H. K. M'CONNELL, OSAGE CITY.

The title to my subject was assigned me by a distinguished member of our Honorable State Board of Health, and I can but suspect that it is with *malice prepense* to elicit the opinion of an outsider as to the dignity and moral character of sanitary

work. Even doctors are mortal, and evince a pardonable vanity to know if "we see ourselves as others see us."

Tried by the vocabulary of the accepted theologian, most that we know is not divine. What we know of God would make a much smaller volume than what we know of physical things. But, thanks to the looseness of modern thought, there has appeared a suspicion more or less supported by authoritative utterance and volumes of experience, dear-bought experience, that the better divinity is plain outdoor, hedge and highway humanity — that godliness is in its best analysis practical manliness.

That we seem not too radical, and that we pretend not to new things, we may recite that when that great angular Hebrew commoner, that catapult for throwing "truth in chunks," John the Baptist, introduced "God manifest in the flesh" to that sea of up-turned Hebrew faces, as they gathered and loitered on the shores of Jordan, he did it in words of rhetoric and diction beautiful as they are immortal. Diverting the wild popular inquiry from himself to Jesus of Nazareth, who then unobserved stood in the crowd, he said, "There standeth one among you whom you know not;" that is, there standeth among you a plain, a very plain man, not contra-distinguished from the common people, a poor man, the son of a carpenter. He is the great human problem *in propria persona*, and for that reason "He that hath seen Him [me], hath seen the Father." And when this "God manifest in the flesh" formulated His divine constitution, He stood on the granite ledges of the great first commandment of the law, "Thou shalt love the Lord thy God with all thy heart, and with all thy mind, and with all thy soul, and with all thy strength," and from this vantage-ground said, "The second commandment, Thou shalt love thy neighbor as thyself, is equal to the first;" that is, these two commandments are equally divine, and indeed are but different utterances of the same identical truth. The man who loves his fellow-man, and in that love and for it subserves human good, hath in his creed "all the law and the prophets." About Ben Adhem's name was not on the list of "those who love the Lord," but he got to heaven just as well, for when it was found that his name was on the roll of those who love their fellow-men, "his name led all the rest."

Art is false, in that it has in all its imagery and portraiture of Jesus of Nazareth contra-distinguished him from other men. Whereas the truth of history includes him with the average lower strata of common people; his pictures and images give abnormal prominence to his brain, his mien, and his air. Those who saw Jesus saw no halo of glory surrounding and radiating from his face. They saw a "man of sorrows and acquainted with grief;" one "stricken, smitten of God, and afflicted." He said when that great reckoning-day comes, and assembled humanity stands before my Father, he will divide them as a shepherd doth his flock, and to those on his right hand he will say, "Come, ye blessed, and inherit what I have prepared for the deserving: for I was hungry, and ye fed me; in prison, and ye visited and cheered me; and I was sick, and ye ministered unto me." That is, when my poor children of earth were in need, you attended upon and alleviated their needs; and you know that every good father lives in the person of his child, and makes the treatment awarded the child personal to himself. "As ye have done it unto one of these, my little ones, ye have done it unto me."

Thus sheltered by authority, we may with safety say that if sanitary science and practical sanitation are human and beneficent in their objects, purposes and results, then sanitation is divine.

We take but little risk at the hands of those who love the truth of history when we say that all great systems of religion are but so many organized sanitary reforms. They all, more or less strictly, avow and maintain that cleanliness and

longevity are godliness. As the just meed of sanitary credit comes more and more to be awarded to the great founder of Judaism, even Ingersoll is the less and less inclined to magnify "the mistakes of Moses." And when Ingersoll comes from his darkness to see Moses as the sanitarian that he is, he will forgive all his geological blunders.

It is simply the fact that "the Teacher and the Master" of Christian religion proposed and taught a system of sanitation that in its ultimate analysis should eliminate deathliness, and inaugurate an immortality for humanity. When he defined his earthly mission, Jesus used these remarkable words: "I have come that ye might have life, and that ye might have it more abundantly." "He that believeth in me, though he were dead, yet shall he live again, and he that liveth and believeth on me shall never die." Confucius, Zoroaster, Moses, Mohammed, Swedenborg and Jesus were each and all great sanitary lights in the world, and in such company the sanitarian of to-day need not be ashamed of his cause nor despise his work. It is not against sanitation that doctors are hated and persecuted. The world with much uniformity despises and has despised its best friends and crucified its redeemers. Courage and consolation may in some measure be drawn from the fact that we first crucify, and afterwards deify. Sanitation is the science of preventive methods. It is not the practice of medicine, but looks to the ultimate abrogation of the practitioner's trade. It does not propose to cure, but to prevent, black death, yellow fever, Asiatic cholera, typhoid fever, and small-pox. That the practitioners of medicine should also be the earnest and invincible, irrepressible leaders in sanitation, is not easily explicable. Practically, they are as sanitarians removing the vitals of the business which as practitioners furnishes them and their families food and clothing. That a doctor wears out his muscle to get to the bedside of his patients, is easy of comprehension. It is thus he earns his pay. But why he should wear out his brain to prevent the recurrence of just what makes his trade profitable, can only be explained upon the theory that the medical profession is graced with high, broad and humane-souled men, men of the best divine conception of life and labor. They by their devotion to sanitary reform, beautifully illustrate that while it is good to cure and alleviate pain and suffering, it is far better and higher to prevent.

While, fairly speaking, sanitary science in any popular sense is purely modern, yet no triumphs have been equal to Mrs. Really, called upon the field of conflict by the great plagues and pests of the seventeenth century, she has thus early demonstrated the divine beneficence of her mission, and given unmistakable guarantees that at no distant day in the future she shall among the nations of the whole earth sit and rule mistress and queen of reforms.

The tide of death surged and seethed irresistibly until from a thousand years the age of man was reduced to twenty-one years at the close of the seventeenth century. In the seventeenth century forty-seven great plagues decimated the life-centers of the eastern world. The cities of Copenhagen, Marseilles, Moscow, Constantinople and London, and the countries of Malta, Silesia, Bulgaria, North Africa, Mesopotamia and Koordistan were laid low with "black death." That century witnessed, by plagues alone, the death of twenty-five millions of people. The noble profession of medicine came doubly to the rescue. It nobly administered its remedies and certainly cured many; but its resolution then and there solemnly made to prevent the recurrence of such death-blights, and the enforcement of that resolution, were the noblest work of all. From that time until now the recognized practitioner of medicine has spent his brain and energy and life to discover the germs of disease, and the habits of these germs, with a view to placing them under police control, that disease might not anew recur, and that the grip it already had might be relaxed and ultimately released. Great medical minds and lives have furnished the force and

methods, and philanthropic wealth has furnished the machinery and appliances, and the great triumphant march has been continued until black death has been driven from the earth never to return. The germs and their habits of many of the great fatalities are familiarly known and understood by the medical profession, and as one result there have been brought back to the average human life fourteen full years, and still the years emancipated to us are coming.

I need not say that the work of sanitation is yet in its infancy—that the child is yet but a babe, swaddled in a manger. Its manhood is yet to be attained. Legislation begins to help it. Private and intelligent beneficence is marching to the tap of its drum. In this connection, I cannot forego the pleasure of mentioning the magnificent work just completed and put at the command of sanitary science by Dr. C. N. Hoagland, of Brooklyn, N. Y. I allude to the Laboratory for the Study of Bacteriology, which, at an expense of more than a hundred thousand dollars from his own private purse, he has built and endowed and placed as an adjunct to the great medical college and hospital. I plead guilty to a special pride in mentioning this work of a great and good man in a greater and better cause. He was, before the war, my neighbor and friend; during the war he was the surgeon of my military staff; since the war he has made himself the benefactor of mankind; and yet he has not forgotten the friends of his lesser days. He has made his Brooklyn the Mecca of medical and sanitary learning. I know him well, and I know many others of the profession as well. He is like them, and they are like him, in one choice respect—"they love their fellow-men;" "and by their fruits ye know them."

Ladies and gentlemen of the Sanitary Convention of the State of Kansas, standing here to-day at this Emporia of our great nation for a brief retrospect of the work of sanitary science, fail not to witness that public prejudice lies conquered at your feet. Legislation is asking to come over and help it to do its best work; public education is asking you to write its text-books; private fortunes are building and endowing colleges, hospitals, laboratories and workshops for you; intelligent society is warming into appreciation of your beneficent work; the plague is banished, and fourteen years of precious life have come back to your race—all to grace the grand march of your divine sanitation. Only let not the glory of this partial triumph relax your vigil or your struggle. Remember the motto of your proud State, "Through asperity to the stars." And we are a long ways from the stars. The nearest fixed star in the vaulted blue above is so far away that it requires seven years for a shaft of light to travel from it to our earth. And there is asperity on every foot of the pathway. Keep up the fight—you can do and endure it. Keep up the fight—the prize is worth it. Keep up the fight—the crown is immortality.

The next paper presented was as follows:

THE HEALTH OF THE PEOPLE IS THE SUPREME LAW.

BY J. W. REDDEN, M.D., TOPEKA, SECRETARY OF THE STATE BOARD OF HEALTH.

The Roman scholar, historian and orator proclaimed a grand and fundamental truth, one, too, that the advanced scholarship and scientific investigations of this enlightened age are forcibly confirming, when he penned, generations since, in his own Latin tongue the title of this paper, "*Salus populi, suprema est lex.*"

One of the most important documents ever conceived by the mind of man proclaimed the immortal truth that "*all men are created free and equal;*" this is the foundation of our republic, the corner-stone of our liberties, formed by our forefathers in the revolutionary struggles; cemented by the blood of our fathers and brothers in the late civil war, and forever settled by the martyrdom of the immortal Lincoln and the beloved Garfield.

The same declaration of principles enunciated the further (and equally important) doctrine, that "all men are endowed with life, liberty, and the pursuit of happiness." It is for the correct interpretation and the proper appreciation of this principle that boards of health are organized and labor, that sanitarians investigate and impart their knowledge. And it is for this principle that this paper is presented, that we may possibly suggest some truth that will lead the hearer and the reader the more truly to understand and more fully appreciate and adopt all rules and regulations that will tend to the protection of health, and thus enable him to possess and enjoy life and happiness: for without *health*, what is *life*, *happiness*, or *wealth*?

Our subject leads us briefly to consider three great and beautiful axiomatic truths:

First: *Public health* is *public wealth*.

Second: *Prevention* is better than *cure*.

Third: *Cleanliness* is akin to *godliness*.

The Psalmist has said that "man is fearfully and wonderfully made." This is true, whether we view him from an anatomical, physiological, scientific, or *sanitary* standpoint. It is equally true, that as a piece of mechanism the machinery is apparently intended to go on forever.

Another sacred writer has said: "Be strong; quit you like men." While this may apply, primarily, to man as a moral agent, it applies with equal force to man in his physical and sanitary relations, and emphasizes the doctrine that *sound* minds should be in *sound bodies*. But certain well-established and imperative sanitary and hygienic laws must be practiced and enforced in order to maintain the proper relation existing between and dependent upon the different members of the wonderful human system, and thus enjoy the full benefits flowing from its perfect and harmonious operations. Like the finest and most exquisite piece of mechanism that human skill can construct, if the most minute and least-noticed article becomes unbalanced, irregular, or over-strained, it affects the entire machine, and thus sooner or later impairs its usefulness, its symmetry, and its activity. It is equally true with our own system: the body, the mind, the moral attributes, must carry out the plain laws given us for our progress, comfort, health, and usefulness. As self-preservation is the first law of nature, so we should ever be anxious to understand and cultivate all laws which will contribute to the development and maintenance of a well-rounded physical organization, properly-balanced mental faculties, correctly-educated conscience, and thus be fully equipped to do well our part in life's battle, and retire from the last conflict as a *true hero*, meriting the highest honor, that of a *pure man* laboring for the *highest elevation* of his fellow-men.

In the brief compass of a paper of this class, I can only refer cursorily to a few leading and prominent facts bearing directly upon the subject, which we believe will be amply sufficient for the consideration of this intelligent audience to lead them to adopt and practice what they decide is noble, right, and useful.

The words *cholera* and *yellow fever* have a wonderful terrorizing power and influence on mankind. Why? Because they are regarded as national *aliens*; the introduction of either within the domain of the United States brings with it *paralysis of business*, *depreciation of property*, *loss of self-confidence*, *panic*, and all the evils that follow in their train. Not because of the *universal prevalence* of either, nor the number of *cases* afflicted, nor the per cent. of *fatality*; but because of our *unfamiliarity* with them, and the *paralyzing* influence they exert upon *business*, *society*, and *home circles*. And yet, my hearers, you will be surprised when you consider the fact that in comparison with the prevalence, number of persons afflicted with and the per cent. of fatality resulting from those five common, familiar, *preventable* (and to a great extent) unnecessary diseases—consumption, diphtheria, typhoid fever, scarlet fever and small-pox, arranged in order according to their prev-

alence and fatality, to know that yellow fever and cholera are so far in the *background*. Look for a moment at Jacksonville, Florida, where yellow fever has been the most prevalent and fatal, and read of its blighting influence; and yet up to December 7th, the total number of cases occurring there were 4,704, and 412 deaths—a small fraction over eight per cent. Florida has unfortunately no State board of health, and the county boards are quarantining against each other. There the people are panic-stricken, and it is too late to give them any advice. Their methods of “shot-gun quarantine” are not only unnecessary, but exceedingly cruel and barbarous.

The National Health Board had a perfect system of inspection, isolation, depopulation of infected places, and sanitary supervision of travel and traffic both by land and water; its certificates were based on actual knowledge, and commanded confidence wherever they were presented. The Illinois Central Railway Company and other important transportation agencies are on record to the effect that the work of the National Board during the season of 1879 was of inestimable benefit to the whole valley, and made a difference of millions of dollars in the volume of business. As compared with the interests involved and the extent of territory infected from the previous year,—for it must be remembered that the epidemic of 1879 was carried over from 1878, just as it is claimed this epidemic is the result of cases which occurred last fall—in these respects this Florida outbreak bears no comparison to the gravity of the situation in 1879 in the Mississippi valley. The large influx of Northern capital, the growing popularity of the region as a health resort, and the increased facilities of communication, all combined to add to the importance of necessary agencies for the protection of the public health in a region so much exposed by its geographical position to the invasion of the tropical pestilence. The effect of a competent State health authority in Florida would have been to prevent the policy of suppression and concealment of facts last year by the local authorities, and proper efforts would have been made to stamp out the infection and to secure a thorough sanitation of the region during the winter—such as was effected after the epidemic of 1879 in the localities visited by yellow fever in the Mississippi valley. In time such an authority would secure a system of sanitary quarantine which would guard the Florida ports as effectually as the Louisiana State Board of Health now guards the delta of the Mississippi. Properly aided by the National Government, such a system would be perfected by prompt notification of danger, by the patrol of all waters by the vessels of the Revenue Marine, and by the efficient operation of a sufficient number of refuge stations for the treatment of infected vessels and the proper care of their people.

Such an organization will be one agency for securing the assumption of this duty by the General Government, and the present emergency offers a favorable time for pressing its consideration. Heretofore legislation in the interest of public health has been obtained, as a rule, at the tail-end of an epidemic. It has too often been in the nature of locking the stable door after the horse was stolen. Let us now see if we cannot reverse the process, and while there is yet time induce not only Congress, but States and municipalities, to take the necessary action for securing a better protection of the public health.

Just now this means more than the good to be found in the saving of human life, and in avoiding the suffering and misery, the ruined homes and desolated families, which an epidemic always leaves in its track. It means the prevention of panic, it means the prevention of the interruption of trade and commerce, it means the prevention of the loss of millions of dollars, all of which would inevitably result from an epidemic of Asiatic cholera in this country. Already the disease has cost southern Europe not less than a hundred million dollars; six million dollars up to October

1st in trying to prevent its spread in Italy alone, with a loss of four million dollars even in the month of August, before the disease had obtained a serious foothold; and now it is announced that the decrease of the national revenues of France has been materially aggravated by the reduction of receipts from railways, caused by the cessation of travel consequent upon the prevalence of the cholera epidemic.

Shall we be warned in time, or shall we wait until the pestilence has landed and obtained a foothold? A single outbreak—possibly a single case—of Asiatic cholera in New York, or Chicago, or St. Louis, or New Orleans, or Kansas City, or Topeka, or Emporia, in our present condition, would cost the country millions of dollars, even though no epidemic spread should result. In 1879 the report of a single case of yellow fever in the South caused a shrinkage in the provision market in Chicago alone which amounted to a million of dollars within twenty-four hours. With a perfectly feasible quarantine system, whose entire cost would not be a tithe of the losses of one epidemic, the chances of that single case may be made exceedingly remote. With an adequate sanitary organization, embracing within its scope the national authority, the State and municipal, each in its respective sphere, not one case, nor one hundred, could establish an epidemic. Such an organization of the sanitary defenses would inspire public confidence, and prevent a panic in the face of real danger—and a panic is one of the worst complications of an epidemic, as fear is one of the most potent predisposing causes of epidemic disease.

The Florida epidemic will not be without its compensation if its lessons are utilized to hasten the adoption of such a system of sanitary defenses—not for any single State, but for the whole country; and not against yellow fever only, but against all preventable disease, whether of domestic or of foreign origin.

Sooner or later the National Government will be compelled not only to assume supervision of exterior quarantines, but to provide for a permanent system of coöperation with State and local governments in the administration of inter-state sanitation, in order to prevent the spread of these diseases from State to State along the great ultra-national highways of travel and commerce. This is a national duty. It is one that the National Government only can adequately discharge, and its expense is, equitably, one which should be discharged from the national treasury.

Eminent physicians, verbally and in the written reports, assure me that one-third or more of the prevailing sickness in town and country could be prevented by the observance of sanitary laws. Mr. Edwin Chadwick stated years ago to the British Scientific Association, that both sickness and death-rates had been reduced one-third by the practice of sanitary laws, and that the death-rate in the old districts has come down to sixteen or seventeen in each thousand persons. With no overcrowding, and with a proper supply of water and surface-cleansing, the death-rate can be reduced to ten in the thousand, which is one-half less than the mean death-rate among the general people. More remarkable than even this promise, but resting on the common-sense rules of fidelity in public service—and adding, perhaps, a becoming sympathetic interest in the happiness of mankind—is the statement that in well-governed institutions for children between the ages of three and fifteen years, the death-rate can be reduced to two-thirds of the number generally prevalent, or to three or more in each thousand children, and with a corresponding immunity from all common epidemics. Even in the British reformatory prisons, by the careful use of preventive medicine the death-rate has been reduced to three in the thousand, with a general exemption from diarrhea, dysentery, typhus fever, and eruptive diseases. The diseases belonging to the respiratory organs are also reduced to one-half.

The cholera epidemic which prevailed in England in 1832 frightened the people

there into the necessity of securing more of the decencies of life than had before been enjoyed. The panic of a scourge, like most other panics, prompted many of the people to "put on their thinking-caps," and from the consequences of the cholera came, in the course of ten, twelve, and fifteen years, valuable government reports and laws. These laws, if Dr. Bowditch be correct, are in advance of the laws of all other countries; and one man, Dr. Farr, was the bright particular star in this work of sanitary reform, not only for Great Britain, but in many other parts of the world. If disease spreads by contagion, so also good example and benevolence inspire imitation.

The great pioneers of the world in discovery and work have proved the greatest benefactors; and to the good beginnings at home and abroad we owe to-day the existence of thirty-three State boards of health in thirty-eight States of the Union; and all of these have been established within eighteen years. Lord Derby long ago declared that "no sanitary improvement worth the name will be effective, whatever acts you pass or whatever powers you confer on public officers, unless you can create an intelligent interest in the matter among the people at large." Lord Beaconsfield spoke the truth for his own country when he said, as Prime Minister of England, six years since, that "the health of the people is the first duty of the statesman." This sentiment is at least equally true in a country of such enormous proportions as our own, and daily increasing, not only from its own inherent growth, but as the destined home of millions now in the world. The Government and the States are not asked for what so often excites and thrills the body-politic by the possession of the place, patronage, and power, but simply to engage in the paternal work of saving lives and promoting the health of the people. The appeal is to the common sense and practical humanity of members of Congress and of the Legislatures of the States. The motives of this needed work are of our best natures, since "the greatest good of the greatest number of people" is all that is asked.

If, when governed by such considerations, the people refuse to act, the law here, as abroad, must take its course, and penalties be imposed for its violation. Nor is it enough that "men *mean* well: it becomes them to *do* well." You are asking nothing new of the State or Government. Centuries ago the republics of Greece and Rome had their sanitary laws, and the argument then, as to-day, as a part of the important work of the period, was that physical culture would secure physical health. The old Romans had their systems of ventilation, drainage, and sewerage, their splendid aqueducts, baths, and pavements; and all of them promoted the comfort and convenience of the people. Sanitary law also was a part of the Mosaic law, and in practice better at times than the customs in our own American towns and cities, in the closing years of the nineteenth century of the Christian era.

Therefore, may we not, with one accord, agree that public health is public wealth, and adopt the language of Sterne: "Oh, thou blessed health, thou art above all gold and treasure; 'tis thou who enlargest the soul, and openest all its power to receive instruction and relish virtue. He that hath thee, hath little more to wish for, and he that is so wretched as to want thee, wants everything with thee."

The subject of prevention is now interesting the minds of thousands, engaging the attention and receiving the investigation of the most expert and scholarly sanitarians and microscopists. The first session of the congress for the study of tuberculosis in men and animals was held in Paris, on the 25th and 31st of July last, under the presidency of Prof. Chanveau. The presence of bacillis in cases of tubercule is now almost universally accepted as the most reasonable theory, and the efforts of practitioners are directed to the destruction of this element. If the treatment so

far has not met with much success, those interested may find more if they direct their attention to its prevention. The conclusion of the congress is that the source of infection is in the use of food infected with tubercule, and that to prevent the spread of tubercule it is sufficient to thoroughly cook the meat and always to boil the milk. The following were the principal subjects of deliberation:

1. More extensive powers should be given to boards of health, and the general surveillance of committes on epizootics should be given to them; and consequently the diseases of animals and all questions relating to the contagious of domestic animals, even those which heretofore have not been considered transmissible to man, should be submitted to them.

2. The congress has seen with satisfaction that tubercular disease among cows has been placed among contagious diseases, and the decree has been signed by the president of the republic.

3. It will be necessary to insist firmly on the necessity of seizing and destroying all the meat of animals affected with tuberculosis, wherever may be the place from which they come, or whatever may be their apparent health.

4. These considerations are applicable to every country in the world, because wherever the place may be, the question of tuberculosis presents the same problems for solution as in France.

5. It is necessary to distribute among the people, especially in the country, such plain and intelligible instructions as will enable them to guard against the dangers of eating the meat or drinking the milk of tuberculous animals. They should also be instructed as to the best methods of disinfecting animals and animal excreta, and of enabling them to destroy all the germs of disease.

6. Cows intended for the production of milk should be subject to a special supervision to prevent the milk of any tainted with contagious disease from being offered for use, and this supervision should extend alike to all establishments in which animals are kept for such production.

Again, Cornet experimented with the dust obtained from the walls and floors of various dwellings in which tuberculous patients had been; inoculating Guinea-pigs with it, and carefully excluding all possibility of infection from outside source. In this way twenty-one rooms of seven Berlin hospitals were examined, and bacilli found to have been present in the dust from most of them. Positive results were obtained with the dust from insane asylums and penitentiaries. The dwellings of fifty-three tubercular patients were investigated in the same way, and the dust in the neighborhood of twenty patients found to be virulent. It was the case, with absolute regularity, that the dust was always virulent when the patient had been in the habit of spitting on the floor or in a handkerchief, while it was never so when a spit-cup had been employed.

Let us glance a moment at sanitary science in military and civil life. A quarter of a century ago the death-rate in the guards of the army of the Empire was 20 per 1,000; it is now $6\frac{1}{2}$ per 1,000, due to applied sanitary science, and as I could show, it is yet much too high. The death-rate in the home army was 17 per 1,000; it is now about 8 per 1,000. But Germany beats us, with her death-rate of 5 to 6 per 1,000. In France it is 10 per 1,000, in Austria 11, in Italy 11, in Russia 18—an army death-rate three times heavier than in Germany. The old Indian army death-rate was 69 per 1,000; from 1879 to 1884 the death-rate was reduced to 20 per 1,000, and now it is about 14 per 1,000. In the six years from 1879 to 1884 the aggregate saving was 16,910 lives, and on the military estimate of £100 per life, the saving in money during these six years (as estimated by the eminent sanitarian, Prof. De Chaumont, of Netly, whose loss is greatly to be deplored) was £1,691,000; and at the present reduced rate of 14 per 1,000, the saving may again be reduced in proportion.

In civil life: Nowhere in this country has the sanitarian been more energetic than in the lower valley of the Mississippi. Typhoid fever is never absent from New Orleans, and, with no other change in conditions except the enforcement of sanitary regulations, the death-rate from that disease has been reduced from 68 per 100,000 of population to 16 in less than twenty years; and the decrease has exactly kept pace with the sanitary improvements. And here is a place for comparison. The sewage of New Orleans cannot pollute the water supply, rain-water from huge tanks being used. In Philadelphia, where the water is known to be contaminated, the death-rate from the same disease has increased from 56 to 66 per 100,000 in the same period. Pennsylvania has at last found it expedient to establish a health board. In Michigan the saving of life from scarlet fever in the last eleven years amounted to 3,718; and in 1886 appropriate sanitary measures saved the lives of 298 persons who, under the usual conditions and according to former epidemics, would have died of diphtheria in a few localities. In Nashville the death-rate has been reduced in fourteen years from 34.55 per 1,000 to 16.36 per 1,000. In Memphis the death-rate has been reduced in six years from 35 per 1,000 to 23.8 per 1,000. In Chicago the death-rate has been reduced in the last five years from 26 per 1,000 to 19.46, a saving of nearly twenty thousand lives. These important facts are little in comparison with the incalculable work that is being done in most of the large centers of population throughout the country, and are thrown out as simple indications that things are done to justify the confidence of the public in measures of public health. Defective statistics leave the best work unnoted. In Massachusetts, where statistics are collected, sanitary regulation has reduced the death-rate from infectious diseases in ten years from 28.6 per 100,000 to 18.5.

A few facts as to the prevention of those common and very fatal destroyers of the human race—typhoid fever, diphtheria, scarlet fever, and small-pox. Typhoid, sometimes called “enteric fever,” “fall fever,” etc., is a common disease of frequent occurrence in our State. It is especially a disease of young adult life, although no age is exempt from it. It attacks all classes of society, being found both in the mansion and in the hovel. It is probably the most *preventable* of all infectious diseases—excepting perhaps small-pox since the introduction of general vaccination. In view of this fact, and that it is the cause of so much sickness and death in the State, it is hoped the following information will be carefully considered and followed by all.

There is a pretty strong conviction in the minds of sanitarians and physicians that typhoid fever is a disease which has but little right to exist in a civilized community. Such thoughts regarding things inevitable and necessary are neither reverential nor profitable; but intelligently-directed efforts to diminish the prevalence of typhoid fever have been followed by so large a measure of success that we are justified in regarding it as one of the *unnecessary* diseases. The prevention of typhoid fever must rest very intimately on a knowledge of its cause, or at least on an acquaintance with the known laws in accordance with which the cause operates. The essential cause of disease is generally believed to be a minute germ, which is given off by the sick, and may be transmitted to the well in several ways.

Still another thing which experience seems to teach, and which the public should bear in mind, is that this fever-germ may be not only developed, but multiplied, outside the human body. That the fever patient is in some way a factory for the time, being engaged in producing and throwing off a poison dangerous to other persons, is a matter of common belief; but of late years there has come a settled conviction that this poison, or disease-germ, as we now call it, may be, and very often is, developed and multiplied to a dangerous extent outside of the human body, when it is once introduced into places which present the favoring conditions of

moisture, warmth, and filth. Hence the vital necessity of care not to plant the dangerous seed in soil congenial to it. In some instances, the disease is so mild that the patient never goes to bed, and may be even unaware of the nature of his malady. It is not believed that filth of itself will cause the disease, but it serves as a *nidus* (nest) in which the specific germ of the disease lodges, lives, and multiplies. Typhoid fever is *communicable*, but it is *not* considered contagious. The poison of typhoid fever may sometimes be received into the system by breathing it in, but in undoubtedly the great majority of cases the disease-germ finds its way into the system by means of the food and drink. Reflection will show, and experience teaches, that there are many ways in which our food and drink may become contaminated with germs. Some of the more frequent ways are these: The soiled clothes of the patient are washed, and the water carried by a loose and leaky drain which runs too near the well. Some kinds of food and drink are very absorptive of disease-germs, and, being kept too near the patient, become contaminated through the air. Many cases are known where milkmen, with fever at their own homes, have caused serious outbreaks of the disease among their customers by keeping the milk, before it was distributed, too near the sick, by diluting it with contaminated water, or even rinsing the cans with impure water.

Every intelligent citizen should feel that he has himself to blame if a case of typhoid fever occurs in his family, because in the way pointed out he can usually prevent it. If heads of families will protect themselves by creating a public opinion sufficient to compel local boards of health to use their abundant legal powers to protect the communities for which they exist, typhoid fever can never become epidemic, and isolated cases will be guarded and cared for as are the victims of small-pox. In this way typhoid fever has been "crushed out," and can be again. Sustain and encourage your local health officer. The management of an epidemic of this, as of other infectious diseases, requires an active, intelligent and fearless local board of health. The physician who is health officer of such a board should be in fact, as in name, their *executive* officer; and should feel, as very few now do feel, that in the performance of his plain duty he will be heartily supported by his board and the people whose representative he is. He has claim on the medical profession rather for advice and encouragement than for carping criticism, as he is, in fact, their representative in public sanitary work.

Typhoid fever prevails excessively this fall in so many places that we cannot find room to enumerate them: many of the worst seats of this prevalent epidemic being in rural places from which no regular mortality reports are issued. For instance, some five hundred cases in Duluth, Minnesota. The cause invariably reported is contaminated water. In Ohio, over a hundred towns are reported suffering, in ordinary times, from typhoid fever caused by sewage-contaminated drinking-water. How long must this utterly needless scourge prevail, in presence of the ready, certain and practicable means for every community to suppress it by purifying their water? At Marietta College, of twenty guests at one dinner, all imbibed typhoid fever, and three died.

The number of localities reporting the existence of typhoid fever each month in Kansas demands of the local health authorities immediate and careful investigation. No water or soil contamination, no typhoid fever, is the axiomatic teaching of sanitary science, and consequently no weary weeks of suffering and prostration, no long nights of anxious watching by friends, and no untimely deaths, whereas hundreds are now annually consigned to premature graves by this preventable scourge.

We shudder at the ravages of cholera, but let us come nearer home. Typhoid fever slays its hundreds where cholera slays its tens. Every death from typhoid fever is unnecessary. If the soil were not contaminated, none would occur. Yet

there are 1,000 deaths from this disease in Kansas each year; and for every one that dies, ten are sick, and not a case is justifiable. Each patient is sick, on the average, about four weeks, and there are about ten thousand sick during the year. This means not only a great loss of wages, but a nurse is required for each person sick, so that twenty thousand people in Kansas give up their entire time to this disease four weeks out of each year. You may keep your premises clean, but only a little fence separates you from your neighbor, and he may be careless. If that neighbor should knock you on the head in a dark night, he would be sent to prison, but he may contaminate your well, and rob you of your life and your family, and you can do nothing. The time will come when it will be a criminal offense for any man, through carelessness, to give his neighbor a communicable disease.

Diphtheria is a contagious and infectious disease, attacking persons of all ages, but affecting children much more frequently than it does adults. It may be communicated from the sick to the well by means of persons, cups or other articles which pass from mouth to mouth, or through the medium of the air, or it may be spread by means of clothing. So generally is diphtheria regarded as due to unsanitary conditions, that by common consent it is classified among the "filth diseases;" and when we find it arising apparently independent of sources of infection, spontaneously as it would seem, we may be pretty sure that something is wrong in the health conditions of the home where it is found. The unsanitary conditions which seem to give rise to diphtheria may be in the direction of the food or water supply; the well may be too near the privy, or cesspool, or sink-drain, or barnyard, and be polluted by soakage through the filthy soil; or the something wrong may be in the direction of the air supply; the sleeping-rooms and living rooms are perhaps not ventilated, and the air is rebreathed and poisoned, or a wet and foul cellar is under the house, or sewer gas goes into the rooms from defective water-closets or other fixtures, or from drains or privies or cesspools.

When once diphtheria has arisen, the law of simple contagion carries it to the rich and poor, to the cleanly and the uncleanly, but not to all alike. Filth invites disease, and gives its germs the most congenial soil in which to develop into pestilence, but cleanliness offers only barren ground for their development.

Diphtheria is a preventable disease. Proper preventive measures are almost invariably followed by the limitation of the disease to the first case or cases. *When diphtheria gets away from the primary cases, and makes its escape upon the community, somebody is to blame.* The sooner we accept this as a sanitary maxim, the sooner we shall begin to do our duty as individuals and as communities.

Scarlet fever, scarlatina, scarlet rash and canker rash are several names for one and the same disease. It is very desirable that only the name scarlet fever should be in general use, for so many names have wrought much confusion in the popular mind. Sometimes in scarlet fever the fever is light, sometimes mild. Sometimes the eruption is a vivid red rash, sometimes it is barely perceptible. Sometimes the inflammation of the throat is very malignant, sometimes so light as not to be noticeable. No matter how these manifestations of the disease may vary in different cases, it is all scarlet fever, and one attack prevents subsequent attacks. With children scarlet fever is one of the most infectious of diseases, although at times it behaves capriciously. Sometimes children who have never had it escape, although freely exposed to its contagion; again, the slightest momentary exposure may be sufficient to give the disease.

The poison of scarlet fever is very readily conveyed in clothing or other things, even long distances. Such cases as this are so common that almost everybody knows of them; a person calls to inquire about his neighbor's child, who has had

this disease, opens the door just for a moment, perhaps does not go in, walks a long way home, and then gives the disease to his own children. It usually attacks children under ten years of age, hence the great importance of preventing children from being exposed to the disease. The latest evidence indicates that scarlet fever never originates from any telluric or atmospheric influence, but is always due to a specific principle or contagion. *In other words, scarlet fever can only occur by infection from a pre-existing case of the same disease.* Countries have been free from it for centuries till imported by commerce. In view of this fact, the great importance of isolation, quarantine and disinfection in preventing the spread of the disease is beyond question. From want of proper precautions in this respect, it not infrequently happens that scarlet fever will attack successively a large family of children. The contagion may be preserved for many months in clothing or in rooms. An article, for instance a handkerchief or a doll, may be used by a scarlet-fever child, and then laid away, perhaps a year, and when unpacked give the disease to other children. A letter or paper sent by mail may bear the disease; the hair of the head or the beard may carry it, when the clothing has been changed and disinfected, and this part of the body neglected. After recovery, for several weeks at least, the scarlet-fever patient continues to be a source of danger to others, as long at least as the skin continues to be rough, and to give off its branny scales of desquamation or peeling. See that your house and premises are perfectly clean. Look to your cellars, sewers, cess-pools, sinks and water-closets, and allow no decaying animal or vegetable matter to poison the atmosphere of your dwelling.

Small-pox is always the result of infection. The specific poison which is the cause of the disease is very active; a momentary exposure will often result in producing small-pox in the unprotected, and the vitality of the infection, under certain circumstances, is capable of being preserved a long time. The disease is dangerous and loathsome in the extreme, giving a high death-rate in the unvaccinated, and hideously disfiguring and maiming many who outlive it.

The present generation can have, from its own observation, no adequate conception of the terrible devastation which the disease caused before the discovery of vaccination. In the large cities one-third of the deaths of children under ten years of age came from small-pox. "Not a decade passed in which this disease did not decimate the inhabitants in one country or another, or over great tracts of country, so that it became more dreaded than the plague." In France 30,000 persons died annually from this disease; and in the whole of Europe from 400,000 to 450,000 perished yearly from the scourge. In Westphalia, where the death-rate from small-pox was formerly 2,643 in the million population, the annual mortality from the same cause declined to an average of 114 in the million from 1816 to 1850, under the influence of general vaccination. In Berlin the reduction was from 3,422 to 176; in Copenhagen, from 4,000 to 200.

These facts will give us some idea of the benefit which has been conferred upon humanity by vaccination. Without the protection which it affords, nearly if not quite the olden fearful rate of mortality would, in the course of a generation or two, be restored. Cleanliness and the observance of the general laws of health might avail a little, but only a little, in restricting this disease, which always seems to have its being in infection. In a community or town well and thoroughly vaccinated there would be no possibility of a serious infection of small-pox. Neglect of this protection has, even in recent years, sometimes led to very disastrous and unprofitable results. Such a course in Philadelphia, in the winter of 1871-2, cost the city in lives and paralyzed business twenty million dollars. And such neglect of vaccination in Montreal lately imposed a heavy penalty on that city and its surrounding province, and at the same time seriously threatened all adjoining States.

Is not prevention then better than cure? We believe the time is approaching when all intelligent and observing people will employ the educated sanitarians and physicians to visit them at stated periods, and pay them handsomely to keep them well and prevent even the approach of disease, rather than pay dearly for nauseous drugs or soothing panaceas. May that period soon dawn.

There is no country that has purer water or air in abundance than America, and yet too many neglect that important command that has come thundering down the ages, "*Be thou clean.*" The American people ought to be the *cleanest* and the *happiest* people on the earth; and there is an intimate relation existing between these two conditions that is not properly appreciated. Much of the suffering, disease and death in all classes of society could be prevented if this truth was generally believed and exercised. *Soap and water and towels* are cheap, and yet too many act, much to their own detriment and cost, as if they were an *expensive luxury*. It was a long-forgotten lesson among general teaching that "cleanliness is next to godliness," and therefore a very close neighbor to all kinds of practical piety. Hence, clear up to and far into this nineteenth century came agues, malaria, small-pox, cholera, scurvy, plagues and pestilences, and all the inherited ills of life to which, from negligence and ignorance, flesh and blood are exposed. Happily for the world, public opinion is now more aroused than ever before in the interest of the public health, and the subject reaches us in the threefold principle of economy, thrift, and morals.

State governments are clothed with power over the health of the people within their commonwealth, and over the territory where the Federal Government is without this kind of jurisdiction. The colleges and schools of the State, its institutions of charity and learning, its prisons and reformatories, its codes and laws, all that belongs to roads, avenues, parks, and even the public and private dwellings, when legislation is needed for health, belong to the parental care of the State.

Epidemics are to be treated as public enemies, and often they are worse than armed foes, because more insidious and beyond observation. They come in foul sewage, polluted streams, and wells of water corrupted by cesspools and closets. They come like a thief in the night, and steal away those jewels of the household, the little ones, whose lives are more precious to their owners than all the wealth of the State. To prevent adulterations in food and drugs—not practiced, I hope and believe, to the extent reported or suspected—is another State duty. To clothe boards of supervisors and trustees in towns and villages, mayors, common councils and health boards in cities, not only with ample power in regard to health, but to require them to pass and enforce ordinances, is a positive duty of the State. A State bureau of health is essential to secure these results, and its action must be impartial, effective, vigorous, determined, and take no step backward.

While Federal and State governments are bound to do what is here suggested, a higher law of duty rests upon the woman of the household and upon faithful men of business. When a woman suggested the first board of health in the State of Massachusetts, the appeal only came when typhoid fever was discovered in a seminary of learning at Pittsfield. The State cannot secure obedience to law without the sympathy and coöperation of the people.

Light and air, cleanliness and order are the great preservers of health, and the *wives, mothers and daughters*, as the necessary *mistresses* of our dwellings, can best serve the State when they secure the greatest possible health in their own homes. Dr. Farr prescribes the right remedy when he says that "*health at home is health everywhere*," and when he adds as his conclusion, from experience, that "the whole future sanitary movement rests for permanent and executive support on the women of the country."

Scarcely a week passes but some county health officer or prominent physician sends samples of suspected drinking-water to be analyzed and examined by the microscope to determine whether it is suitable for drinking purposes; it being suspected as the cause of disease (especially typhoid fever) in private families and among school-children. Municipalities are beginning to be more guarded and positive about the location of plants for public water-supplies, the avoidance of danger from contamination, the nature of the conductors, and the perfectness of the filters, and it is no fancy statement when I say that these precautions alone, during the past year in our beautiful commonwealth, have saved hundreds of valuable lives, prevented untold suffering, and saved to individuals, communities, and the State, thousands of dollars. We cannot, therefore, too forcibly emphasize the important but neglected truth, that *impure water* is the frequent cause of many fatal epidemics. The death angel has often entered the sacred precincts of home and gathered the brightest and sweetest flowers because the water supply had become *impure*.

There are two laws which, if observed, would fulfill nearly all the moral and physical requirements for perfect sanitation. The first is, "Be just." The position of a householder is only one of many in which man is expected to act with reference to the good of others as well as himself. It is not just nor fair to say to your neighbor, "I will arrange my premises to suit myself, and you can look out for yourself," and then place your pigsty, barn, refuse, etc., on the back part or side of your lot, disagreeably, if not dangerously, near his house. In such a case, should you demur because the local board of health listens to his complaint and compels you to remove the danger which you have placed in your neighbor's way? Then again, when you complain of the foul cesspool or vault on your neighbor's premises, do not think it unfair that the board of health, finding cesspool or vault even more filthy upon *your* premises, should call upon you to first "cast out the beam," etc. Further, do not claim that because you have made some needed changes in vault, drain or sewer, and every resident of your ward has not been compelled to go and do likewise, therefore the board of health does not amount to anything. We admire *you* for what you have done, and by patient, constant urging, and the aid of your good example, we hope in time to elevate your neighbors to your high level as a sanitary reformer.

The next law is, "Be clean." First learn how to be clean by learning how to get pure water, pure air, and pure food: and right here come the duties of women as sanitarians. The board of health do not like to come prowling around your back-kitchen doors like tramps; but is there not often need of inspection there? Mother Earth may kindly absorb all the slops and garbage thrown out there, but who can tell how much of disease, and perhaps death, she returns to you in the form of noxious air and vapors or contaminated water? A damp cellar filled with decaying fruits and vegetables may be unknown to your local board of health, but too often the family physician is called to try to undo the damage which a little extra care or a few cents' worth of lime might have prevented. Pure air and sunlight entering those dark, long-closed rooms for even a few minutes every day would remove that dampness and the many germs of disease which may be lurking there. No greater charge could be given a woman than the sanitary regulation of her own house, for there are laid the foundations of the future physical, mental and moral lives of her children. In the country, and in our smaller towns and cities, we are not exposed to the dangers which in large cities arise from the overcrowding, poverty and ignorance of certain classes of their population; therefore let every householder and every mistress of the house, every father and every mother in the city of Emporia, and in the State of Kansas, study how to get pure air to breathe, pure food to eat, pure water to drink, and proper clothing to wear. Then, with every home healthy,

and each containing two vigilant health officers, we shall be able to show in our better selves, and our strong-bodied, pure-minded, clean-souled children, the true work of boards of health.

In conclusion, let me impress upon every hearer the fact that alcoholic or malt liquors should not soil these temples of ours. They are not food, but fuel to add flame and create disease in body and mind. Our State has prohibited their use except for medicinal, mechanical and scientific purposes; and I expect to live to see the day when that clause will be stricken out from our statute book. Do not use tobacco in any form; it is not cleanly, but a filthy, noxious weed, relaxing the nervous system and stupefying the mind. Therefore abhor that which is evil, and cleave to that which is good.

Every person here has an influence: use it with the State Senators and Legislators of Kansas, that they may, at the approaching session, place the State and county health boards on a level with those of adjoining States; give them more power and authority, equipped with ample means to battle successfully with all preventable diseases, and facilities for more extended work and investigations; make an appropriation of a contingent fund to be used in any emergency that may arise in the next two years, by the importation of cholera or yellow fever.

For the consummation of these desirable results, let us use all honorable means, never for a moment losing sight of these facts, that —

Public health is public wealth;

Prevention is preferable to cure; and

Cleanliness is akin to Godliness; for

The health of the people is the supreme law.

The next paper was as follows:

PHYSICAL CONDITIONS NECESSARY TO SUCCESSFUL MENTAL WORK IN OUR SCHOOLS.

BY MRS. F. M. W. JACKSON, M.D., EMPORIA.

Mr. President, and Friends: I have nothing new to say to you. I am only here to tell you the things which you already know. And yet I am aware that, practically, our boys and girls in school do not find the question easy to answer—How can we accomplish the greatest possible amount of mental work in the easiest and quickest manner, and without injury to health?

The oldest and wisest of us, when it comes to the question of severe and prolonged mental effort, find it not a little difficult to so adjust the relations existing between mind and body as that the body shall be the servant to do the bidding, and not the master to thwart the aspirations and purposes of the mind. If, then, persons of mature years are not over-successful in solving this vexed question, surely our young friends in school may take encouragement if they fail to accomplish all they may desire in this direction. The fact is, we do not always learn by our failures; and hence we find that even knowledge and experience are not altogether sufficient in the case. In short, it takes common sense in study, as in everything else, to win success; and this common sense becomes all the more fruitful in results if it shall have begun on the part of the parents in teaching their children, very early in life, right habits of living, and, I might also add, in setting them a right example. In fact, common sense, practically and persistently applied in the family with reference to a proper knowledge and care of the body, and the formation of correct habits, is likely to result in natural development and robust health on the part of the children.

This condition granted, a good foundation for future success is already laid, and mental development follows, as it should, in a natural, easy and rapid course.

Good health, then, becomes the magic key which unlocks many a door of opportunity which must otherwise remain forever closed to human endeavor. It is really the important requisite for successful mental work, and, maintained throughout the years of school life, the boy or girl with even average mental power stands a far better chance of success than the child of remarkable mental gifts without the knowledge and command of his physical powers. My task, then, in treating this subject is an easy one, for in giving you the few hints I have to offer, I shall only be telling you an "old, old story," for there is nothing new to tell.

Like the "good tidings" of old, however, this gospel of good health needs to be preached again and again, and like that, also, it becomes to the listening ear ever new and welcome. In saying this much, I hope the impression has not been given that it is desirable to make the matter of health and the means of maintaining it a subject of constant study and conversation. On the contrary, good health, like good manners, should be "worn as a garment," without ostentation and without undue self-consciousness, for a condition of health should be so natural to us that we should actually forget our bodies just as we forget the air we breathe and the light which enables us to see. And instead of making conscious and constant effort to obey the laws of health, we ought, rather, to be so accustomed to obedience that it becomes natural and easy to us rather than cause for constant watchfulness and self-denial. How often have we heard this remark: "What a pity that the kinds of food we like best are the kinds we ought not to eat!" Why not say, rather, "What a pity we form unnatural appetites for the kinds of food which are likely to prove harmful to us!" And so this question of habit becomes a most important one with relation to all the various functions of the body; and, in view of this, the necessity for early formation of right habits can scarcely be overestimated.

That this condition of habitual health is of primary and vital importance with relation to the possibilities of mental achievement, cannot be denied. Let us therefore consider a few of the influences which most directly affect the body for weal or for woe. I shall speak of them very briefly, and mainly with reference to their practical bearing upon their school-life and work. I have said that common sense is necessary to successful work in school. Let us see if we apply it with equal force to all the factors which enter into this problem of success. We spare no labor or expense in building the best school houses; we compass not only the whole State, but the whole country, to secure the best teachers; we count no effort or study too great in devising the best methods of instruction; we are critical and exacting in the matter of proper text-books and appliances for study. In short, we demand the best that can be had, and are constantly setting our standard higher in order that every facility for obtaining a good education may be secured to the children and youth of our State.

This is well, but unless we apply the same strict business principles to the physical conditions, we are inconsistent, and much of our labor is in vain. We are all familiar with the expression, "free as air," and so it is free—out of doors; but how free is it elsewhere? In our school-rooms, for instance, where our children sit from four to six hours of the day, engaged, or making a vain effort to be engaged, in close mental application? Are our facilities for ventilation such as the importance of the case demands, and, being such, do our teachers make use of them? Is it not too often the case that we become so accustomed to impure air that we are unconscious that we are breathing it?—or, if not unconscious, so little disturbed by it that we do not consider it worth while to make the effort to admit fresh air? The fact that nature provides pure air in such abundance, together with the other fact, that breathing is the most important of all the bodily functions, ought to make us so imperative in our demand for this life-giving element that we *must* and *will* have

it, as our natural right, from which no circumstance of time or place, or restriction of clothing, should debar us. The question should be, not how little can we possibly get along with and avoid actually becoming sick? but, how much of it can we possibly take into our lungs, and how can we further increase our breathing power so as to consume still more, and thus not only add to lung capacity, but at the same time increase immeasurably our bodily and mental vigor?

Alas! how poorly do we appreciate the rich gifts which nature so freely showers upon us, and how blindly do we shut our eyes to the high privileges so easily within our reach if we will but stretch out our hands to take them. Better were it that we become willing to accept imperfection in the methods, and even mediocrity in instruction, important as these both are, than to permit indifference or inattention to this most important condition, without which we sadly fail in the proper work of public education.

One word, also, in regard to the temperature of the air we breathe. During the seasons of the year in which artificial heat is required, great care should be taken to keep the temperature of the rooms we occupy as even as possible, and that should not be too high, as is very generally the case in our dwelling-houses, and in public rooms as well. In a school-room, I would say it should not be above sixty-eight or seventy degrees, unless it might be when the atmosphere outside is very damp and chilly. I have observed, as doubtless many of you have done, that children have greater mental activity and do much better work in an atmosphere not warmer than sixty-eight degrees. In my own experience in the school-room, I found it was better, as a rule, to let it fall a little below sixty-eight rather than to allow it to rise above seventy. And here let me add a practical hint to teachers: Do not rely upon guess-work as to the temperature of your school-room. Have a thermometer, and use it. Do not let it hang off in some corner, too high on the wall to make it of any use, and do not depend on the janitor to regulate the heat of the room. Attend to it yourself, or at least hold yourself responsible for its being done. Diligent attention to this point, in connection with eternal vigilance and faithfulness in the matter of proper ventilation, will secure to your pupils, in a very great degree, immunity from colds and headaches, the two most common and perhaps most formidable hindrances to successful work in the school-room.

This same hint will apply also to students who do most of their studying in their own room. Persistent attention to these two matters will enable you to do your work with far greater ease and satisfaction, and in a shorter time than it could possibly be done without it.

In speaking of the importance of proper dress for our young people, what I have to say will apply more especially to girls than to boys, because, as a rule, boys are much better dressed than girls. By this I mean their clothing is much better adapted to the needs of the body, these needs being especially:

1. Protection from cold and dampness, which necessitates proper materials and equal distribution over the body.
2. Sufficient looseness and freedom from stiffness to allow the utmost freedom of movement of every part of the body, from the crown of the head to the soles of the feet.
3. The shoulders as the base of support.

That these three requirements are very generally met, as to the clothing of boys, will doubtless be conceded. How is it with our girls? Very far from it. Many of our little girls come up very near to the standard of comfort deemed necessary for boys; some of them, I am glad to know, come quite up to that line. But somehow, when girls become young ladies a majority of them, either voluntarily or otherwise, deliberately enter into bondage—the bondage of uncomfortable and unhygienic

clothing. The only wonder is, that with the intelligence and good sense with which our girls are generally endowed, they do not rise in rebellion against this servitude and cast it off forever. And I want to say to the girls in this audience to-night, that I am exceedingly anxious you should have a fair chance in the world alongside of boys, but I tell you truly that you can never have it, because you can never have the adequate strength and vigor of body to prove your title to that chance, so long as you deliberately hinder proper physical development and hamper yourselves unnecessarily and foolishly by the clothes you wear. This may sound a little hard to you; but when I hear some of you young ladies in ordinary health complain of a few easy flights of stairs, and of the utter exhaustion—the “tired-to-death” feeling which you experience on walking a mile or two, I cannot help telling you that I know something is wrong. If you are sick, your place is at home, and not in school. If you are not sick, but simply lacking in muscular development, what you most need is to set about doing something, and doing it promptly and vigorously, toward developing the strength you ought to have and may have if you will, and thus put yourselves in a position to command success, because you shall have proved yourselves worthy of it.

And in regard to this question of exercise for our pupils in school, I believe there is far more danger of having too little than too much of it. The voluntary giving up of recess should be thoughtfully considered by the teacher. In most cases I am strongly of the opinion that a choice on the part of the pupil to do this should be decidedly discouraged, if not absolutely prohibited. Muscular activity ought to be as natural as breathing, and a young person in health who does not seek it gladly and enjoy it keenly is an anomaly, and ought to receive every possible encouragement to engage in active exercise and at frequent intervals.

The same may be said of pupils who do not enjoy calisthenics, and who therefore in their class exercises go through with the movements mechanically, as if it were some difficult and disagreeable task to be gotten through with as easily as possible. Something is wrong with such pupils, and the sooner they wake up and get some life and activity into their bodies, the sooner will they put themselves into harmony with the spirit of energy and aggressiveness which preëminently marks the age in which we live, and without which they will find themselves a long distance behind in the race of life.

Recreation, in a wider sense than that of mere physical exercises; food, cleanliness, sleep; school-rooms arranged with reference to proper warmth and light; seats favorable to comfort and natural sitting position; suitable and sufficient playgrounds—all these and many other questions must be considered, if we would place our pupils under conditions favorable to the accomplishment of the best possible work in school. I must pass them with a mere mention, however, and say a few words in closing upon another subject of special and vital interest to every community, and of anxiety and concern to all who are taking note of the obstacles to the highest success of the rising generation. I wish there were no need to mention it, but it is true and must be said, that our boys are also many of them in bondage—the bondage of the cigarette and cigar. I need not describe to you the nature of this bondage, nor tell you with how firm a grip it holds its victim. You know it all. You know the effects of these powerful narcotics upon both the bodies and the mental faculties of our boys; nay, more, upon their moral natures also, because it is impossible to dwarf both body and mind—as this pernicious habit of cigarette smoking on the part of our young and undeveloped boys most certainly does do—without at the same time weakening the will power and blunting the moral sense.

Do we foresee the outcome of all this? Can we fail to trace to its legitimate end this blighting and degrading influence, and to forecast the future not only of these

same boys themselves, but the future, also, of the society of which they shall form a part? What are we going to do about it? Are we going to stand by and see our bright and promising young lads led on to ruin, or at least shorn of a large measure of their power for good—of the dignity of their manhood and their usefulness in life?

God forbid that we should be so indifferent or so deaf to the call of duty. They are needed at their best to do the world's work. Why cannot the protecting arm of the law be thrown around them as it has been to shield them from the temptations of strong drink? Is it not a little inconsistent in our own State government to protect our boys from the formation of the drink habit, by prohibiting the sale of intoxicating liquor, while its twin evil, tobacco, is left entirely free to tempt them on every hand? Will not our Legislature, at its next session, consider this matter as the gravity of the situation demands, and give us a law making it illegal for our boys to obtain tobacco in any form or manner whatever? Let us ask this of our legislators, as instructors of the children and youth of our State; as guardians of the public schools; as parents, begging protection for our boys which the home cannot provide; as moral teachers, in the interests of morality; as physicians, seeking the physical well-being of the young; as philanthropists, for the love of humanity; as citizens, whose pride in our beloved State is equaled only by our faith in her future greatness—a greatness which shall consist not alone in material wealth and prosperity, but, above and beyond that, a greatness, rather, which shall show to all the world that in a moral, even more truly than in a material sense, her course is "to the stars."

The following was the last paper of the session :

LIMITATION OF SANITATION LAWS.

BY HON. L. B. KELLOGG, EMPORIA.

Among the reserved powers of the people in the several States, not delegated to the General Government, is a somewhat intangible, difficult to define, but all-prevailing plenary power to do whatever is necessary to protect and promote the health, moral comfort and convenience of the people. This power is in the law-books spoken of and designated as the police power of the State. The Supreme Court of Illinois, in the case of *Lakeview vs. Rose Hill Cemetery*, 70 Ill. 192, defines this police power as follows: "It is that inherent and plenary power in the State which enables it to prohibit all things hurtful to the comfort and welfare of society."

The Supreme Court of the State of Maine, in the case of *State vs. Noyes*, 47 Me. 189, speaking of this power, uses the following language: "All laws for the protection of lives, limbs, health and quiet of the person, and for the security of all property within the State, fall under this general power of government."

Obvious illustrations of the exercise of this power are to be found in the criminal laws for the punishment of offenses against the persons and property of the people, such as murder, manslaughter, assault, kidnapping, arson, burglary, larceny, embezzlement, malicious trespass, and the like.

Other illustrations are laws for the prevention of disorderly conduct and breaches of the peace, disturbing religious meetings, suppression of gambling-dens, bawdy houses, and drinking-saloons.

Still other illustrations are to be found in the laws for the creation of State and local boards of health, quarantine regulations for the prevention of the spread of contagious diseases; for the abatement of nuisances; sewerage and drainage laws; laws for the prevention of adulterations of food, the selling of diseased meat; and

generally, laws for the protection and promotion of the public health, which may be collected under the generic name of sanitary laws.

It is to this latter class of laws that your attention is directed in this paper, and to but one topic in connection therewith, viz., the limitation upon such laws. This limitation is to be found, primarily, in the will of the Legislature. It is upon the good sense and the judgment of the Legislature that the people must rely in this matter. It is purely discretionary with the Legislature to act or omit to act in any given case. Mandamus will not lie to compel the Legislature to pass a given health law; nor can injunction be maintained to prevent it from enacting the law. And if the Legislature decides to act, the degree or extent of its action is governed only by its own sense of what is necessary and expedient.

But suppose the Legislature go to an unreasonable length in the exercise of this power, and that it enact a sanitary law that you and I deem arbitrary, unreasonable and oppressive: are we at liberty to disregard it? Certainly not. The citizen may not set up his individual opinion or judgment against the united opinion and judgment of all the citizens—for this is what the law is. All the people, speaking through their Legislature, have proclaimed the will of all.

But suppose the Legislature in the enactment of a law of sanitation go to the extreme of passing a law which in the opinion of a competent court to which it may be submitted is found to be reasonable, may the court set aside the law and declare it to be invalid for this reason? It cannot thus be done. The only power that can take it off the statute book is the power that placed it there, to wit, the Legislature. One Legislature cannot tie the hands of a succeeding Legislature. It can pass no law which the next Legislature may not repeal or modify at its pleasure. An appeal to the people at the ballot-box in the selection of members of a succeeding Legislature is the only remedy for an unwise, injudicious or unreasonable law of sanitation.

That such a law cannot be set aside by the courts is supported by eminent authority. The illustrious Chief Justice Marshall, of the United States Supreme Court, in the case of *Brown vs. The State of Maryland*, reported in 12 Wheaton, 419, uses the following language: "Questions of power do not depend upon the degree to which it may be exercised. If it may be exercised at all, it must be exercised at the will of those in whose hands it is placed."

In the recent case of *Train vs. Boston Disinfecting Co.*, reported in II N. E. Rep. 920, the Supreme Court of Massachusetts decides that it is not competent for a party to show that imported rags, which are by the statute required to be disinfected, do not in fact need or require disinfection.

In Judge Cooley's work on Constitutional Limitations, he says the judiciary cannot run a race of opinions upon points of right, reason and expediency with the law-making power.

In the case of *Hedderick vs. The State*, 101 Ind. 564, the Supreme Court of Indiana says: "Whether a statute is or is not a reasonable one, is a legislative and not a judicial question. Whether a statute does not unjustly deprive the citizen of natural rights is a question for the Legislature, and not for the courts."

I have cited these authorities to emphasize the fact that the limitation upon laws of sanitation is to be found in the intelligence and discretion of the Legislature, and that the courts are powerless to control or limit the time, manner, or degree of the exercise of the sovereign police power of the State by the Legislature in the enactment of these laws.

There is good reason why the authority of the law-making power should be supreme in this class of legislation, founded upon the importance of the legislation itself. There can be no higher concern of government than the shielding of the

citizen from the ravages of sickness and death. This legislation has for its object the stopping of pestilence—the lifting of the human race from the gloom and darkness of disease into the radiant sunlight of perfect health: therefore the power to do this ought to be as limitless as the occasion for its exercise may be urgent.

But are all laws relating to sanitation that may be enacted by the Legislature valid? Not necessarily. In 1879 the Kansas Legislature passed an act to regulate the practice of medicine in this State; but in 1881 the Supreme Court declared the law void, because it conferred upon the Kansas Medical Society, a corporation, the power of appointing the board of examiners under the medical act. This was conferring upon the corporation powers additional to those it formerly possessed, by a special act, a matter that is forbidden by the constitution of our State. The law was clearly within the police power of our State. It was a sanitary measure; but nevertheless it was illegal and void, because in contravention of the constitution. An additional limitation may therefore be stated: Laws of sanitation must be enacted in conformity to the constitution; otherwise, it will become the duty of the courts to declare them void.

A few of these constitutional limitations I here give:

The law must contain but one subject, which shall be clearly expressed in its title. If containing provisions not covered by the title which can be separated from the remainder of the law, these provisions only will be held void.

The law, if of a general nature, must be so framed as to have a uniform operation throughout the State.

No special law shall be enacted when a general law can be made applicable.

The right of the people to be secure in their persons and property against unreasonable searches and seizures is guaranteed by the constitution. A law violating this would be held void.

A further limitation may also be stated. Laws of sanitation, like all other laws, must not be in contravention of the constitution of the United States. For example: Excessive fines for the violation of sanitary laws must not be imposed, nor cruel and unusual punishment inflicted for their violation; they must be so framed as not to abridge the privileges or immunities of citizens of the United States; they must not deprive persons of their liberty or property without due process of law; and they must not deny to any person the equal protection of the laws.

The legal question respecting the class of laws under consideration which most frequently arises in courts is whether a given law is or is not within the police power of the State. If within, no further question, ordinarily, is raised; the law is sustained. If the law is outside of the police power, numerous questions may arise upon the solution of which the law may depend.

The city of Stockton, California, by ordinance, a few years ago, made it unlawful to establish any public laundry where clothes are cleaned for hire within the city, except within certain portions thereof, describing certain uninhabitable sloughs and marshes. This ordinance was held void, as amounting to a destruction of a necessary and ordinary occupation, in itself essential to the cleanliness and health of the people.

San Francisco enacted an ordinance regulating the drainage and heating of public laundries, and their closing on Sundays. This law was upheld by the courts as being within the police power.

Laws regulating the practice of medicine and surgery have been upheld and sustained by the highest courts as being sanitary measures, and within the police power, in the following, among other States: Minnesota, Texas, Nevada, New York, Massachusetts, West Virginia, Ohio, Maine, and Missouri—*State vs. State Medical Ass'n*, 32 Minn. 324; *Logan vs. State*, 5 Texas App. 306; *Ex parte Spinney*, 10 Nev.

323; *Hewitt vs. Charier*, 16 Pick. 353; *State vs. Dent*, 25 W. Va. 1; *Musser vs. Chase*, 29 Ohio St. 577; *Bibber vs. Simpson*, 59 Me. 181; *State vs. Gregory*, 83 Mo. 123.

A statute directing the removal of bodies from a cemetery and for the vacation thereof as a cemetery was sustained in *Kincaid's Appeal* by the Supreme Court of Pennsylvania, 66 Penn. St. 411.

A statute prohibiting the use of any building in cities and towns of certain size, "for carrying on the business of slaughtering cattle, sheep or other animals, or for melting or rendering establishments, or for other noxious and offensive trades or occupations," was sustained by the Supreme Court of Massachusetts in *Inhabitants of Watertown v. Mays*, 100 Mass. 315.

The Legislature may authorize municipal authorities to summarily destroy property without legal process or previous notice to the owner, when necessary to insure public safety: *Blair v. Foreland*, 100 Mass. 136.

The Supreme Court of Iowa has sustained a law requiring physicians to report to clerks of the court all births and deaths coming within their practice and their supervision, under penalty of fine and punishment: *Roner v. Hamilton*, 60 Iowa, 134.

These are illustrations merely of the exercise of this power to enact laws of sanitation.

Kansas needs additional legislation in sanitary matters. Among other things, I think a good law regulating the practice of medicine would be helpful. The State Board of Health ought to have its hands strengthened and power to enforce needful sanitary regulations granted it.

In conclusion, permit me to say, Mr. President and members of this Association, speaking for the citizens of Emporia, that we all appreciate very highly the work in which you are engaged, and thank you for holding this convention of your Association in our city.

The following certificate was presented to the convention:

LAWRENCE, May 31, 1888.

Mr. R. J. Brown, Leavenworth—DEAR SIR: At the annual meeting of the Kansas Pharmaceutical Association, held May 16th and 17th at Abilene, you were appointed chairman of Committee for Conference with Medical Associations. The following is the full list of gentlemen associated with you: H. W. Spangler, Perry; Prof. L. E. Sayers, (is authorized to act on this committee.)

R. J. BROWN, *Chairman*.

[Seal.]

JOHN T. MOORE, *Secretary*.

The following resolution was then read, and unanimously adopted:

Resolved, That the chairman appoint a committee of three to draft a petition to the legislative bodies of this State, to enact such laws as shall properly regulate the sale of poisonous drugs as prescribed in the law regulating the sale of poisons, and of all medicinal preparations whose formulæ are misrepresented. This petition to be presented to the physicians and druggists of the State, under the sanction of the State Board of Health, the State Sanitary Association, the State Board of Pharmacy, and the State Pharmaceutical Association.

The following resolution was unanimously adopted:

Resolved, That a vote of thanks be tendered to President Taylor, the professors, teachers and students of the State Normal School, the press and reporters of Emporia and Topeka, and to the citizens of Emporia, for their assistance and kindly interest in the work of this sanitary convention.

The following resolution was then presented, and unanimously adopted:

Resolved, That it is the sense of this society that the Legislature should pass, at its coming session, a law making it a misdemeanor to sell tobacco to any child under the age of 18 years, and assessing a suitable penalty of fine and imprisonment for the violation of such law.

The following petition was then presented by Prof. Sayre, inviting this convention to meet next year at Lawrence:

LAWRENCE, KANSAS, December 4, 1888.

We, the undersigned, respectfully invite the Kansas State Sanitary Association to meet at Lawrence in 1889.

LEVI HORNER, M. D.

E. H. S. BAILEY, Professor of Chemistry.

L. E. SAYRE, Professor of Pharmacy.

F. H. SNOW.

JAMES H. CANFIELD.

F. O. MARVIN.

L. I. BLAKEY.

J. A. LIPPINCOTT.

A. GIFFORD, M. D.

C. V. MOTTRAM, M. D.

JOHN T. MOORE, Secretary K. P. A.

A. J. ANDERSON, M. D.

On motion, it was resolved that when the convention adjourned, it would stand adjourned to meet at Lawrence, as per the above request, in December, 1889.

The president of the convention on behalf of the officers, and Dr. Schenck on behalf of the State Board of Health and the State Sanitary Association, extended their thanks to the citizens of Emporia, the professors and students of the State Normal School, the ladies and gentlemen who had attended the sessions of this convention, and every person who had presented a paper or taken part in the discussions, for the many courtesies received, assistance rendered and interest taken in the various sessions of the convention, and the general and growing interest manifested in sanitary science.

The Belle-Lettres Hall was well filled during the day sessions, and the large Assembly Hall crowded during the night sessions, by those who were interested in the proceedings of the convention and desired to render their aid and assistance in extending the principles and teachings of sanitary science to the citizens throughout the State of Kansas.

The sessions of this convention will be long and pleasantly remembered by all who were present and took part in its deliberations.

On motion, the convention adjourned to meet at Lawrence, in December, 1889.

After adjournment, a half-hour was very pleasantly spent in social and fraternal greetings.

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